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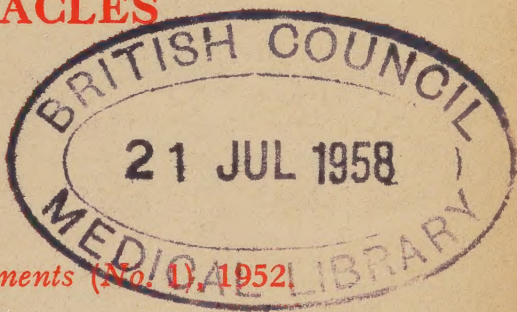
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# BASIC AND BATTLE PHYSICAL TRAINING

## PART VIII

### SWIMMING, LIFE SAVING, AND IMPROVISED AIDS TO CROSSING WATER OBSTACLES

1945



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*Prepared under the direction of  
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# CONTENTS

## PAGE

Distribution...	...	...	...	...	...	...	...	i
Prefatory Note	...	...	...	...	...	...	...	ii

## CHAPTER 1.—INTRODUCTION

## CHAPTER 2.—BASIC SWIMMING STROKES

### SEC

1. The breast stroke	...	...	...	...	...	...	...	8
2. The back stroke	...	...	...	...	...	...	...	22
3. Summary of lessons for non-swimmers	...	...	...	...	...	...	...	32
4. Standard swimming tests	...	...	...	...	...	...	...	35

## CHAPTER 3.—BATTLE SWIMMING

5. The application of swimming to war	...	...	...	...	...	...	...	35
6. Training	...	...	...	...	...	...	...	36
7. Battle swimming tests	...	...	...	...	...	...	...	47
8. Night training	...	...	...	...	...	...	...	48
9. Deleted								

## CHAPTER 4.—IMPROVISED AIDS FOR WEAK AND NON-SWIMMERS, AND THE USE OF SUSPENDED ROPES AND ROPE BRIDGES

10. Improvised aids	...	...	...	...	...	...	...	48
11. Use of suspended ropes and rope bridges	...	...	...	...	...	...	...	54

## CHAPTER 5.—LIFE SAVING AND RESUSCITATION

12. Introduction	...	...	...	...	...	...	...	58
13. Life saving	...	...	...	...	...	...	...	58
14. Resuscitation	...	...	...	...	...	...	...	62

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## PREFATORY NOTE

Basic and Battle Physical Training is the main title of a series of pamphlets that will replace Purposeful and Basic Physical Training, 1942. Each pamphlet, dealing with one or more aspects of physical training, will be issued separately.

Part I.—General principles of basic and battle physical training, and methods of instruction.

Part II.—Basic physical training tables and basic physical efficiency tests.

Part III.—Syllabus of battle physical training and battle physical efficiency tests.

Part IV.—Endurance training.

Part V.—Jumping, vaulting, climbing, scaling and obstacle training.

Part VI.—Pulling, pushing, lifting and carrying.

Part VII.—Throwing, balancing, and physical training for mountain warfare.

Part VIII.—Swimming, life saving and improvised aids to crossing water obstacles.

Part IX.—Boxing and wrestling.

Part X.—Shoot to kill (physical training for weapon training.)

Part XI.—Team games and recreational training.

Part XII.—Fitness training table for boys.

# BASIC AND BATTLE PHYSICAL TRAINING

## PART VIII

### SWIMMING, LIFE SAVING, AND IMPROVISED AIDS TO CROSSING WATER OBSTACLES

#### CHAPTER 1

#### INTRODUCTION

**1. Military importance of swimming.**—The military importance of swimming cannot be over-emphasized. That all soldiers should be able to swim is an ideal which has been repeatedly stressed. Present day warfare, with its battles over flooded areas, and across rivers and canals, however, has given a new emphasis to the importance of swimming in the training of the soldier. Wherever suitable facilities exist, non-swimmers must be taught to swim, and swimmers urged to become more proficient, so that the unit to which they belong will not be hampered in its movement across country. Under active service conditions the soldier will not usually be required to swim long distances, nor will he normally have to enter the water by diving. The occasions when he is most likely to be called upon to swim are as follows :—

- (a) When crossing streams, canals and flooded areas.
- (b) When landing from landing craft.
- (c) When unexpectedly precipitated into water from a ship or landing craft.

Although as previously stated the ideal is that every soldier should be a swimmer, it is very unlikely that this ideal will be attained. Sub-unit commanders should therefore know the capabilities of each man, and should see that those who are proficient swimmers are detailed to help the non-swimmers and the weak swimmers. In addition, weak swimmers and non-swimmers must be taught how to make use of improvised aids to assist them to keep afloat.

**2. Physical and recreational values of swimming.**—Apart from its military value, swimming is one of the finest means of keeping fit, and of exercising the whole body. As a form of recreative

bodily exercise it has few equals. The whole of the large muscle groups are brought into action, and the functioning power of the circulatory and respiratory systems is greatly increased. The ability to swim well gives a sense of personal attainment, power and physical poise. It may also be a personal safeguard in emergency, and possibly the means of saving the lives of others.

**3. General principles.**—The crossing of water by a unit is essentially a team operation. All training in swimming should be directed to this end. The sub-unit commander must co-ordinate the skill and efforts of all his men to ensure speed, quietness and safety in crossing. Where facilities exist, training in battle swimming should be given, especially to men of Field Force units. The skill and water sense acquired, and the confidence gained, together with a knowledge of improvised aids that can be utilized, will prove invaluable in overcoming the difficulties of crossing water obstacles. The ability of strong swimmers should be developed from a military point of view so that when occasion demands they will be able to swim without discarding clothing and equipment. They should be taught how to assist weak swimmers and those in difficulties. They should know how to construct and use life lines, rope bridges, and improvised boats and rafts, and they should also be taught how to make the best use of currents.

**4. Land practice.**—Time will be saved by teaching non-swimmers those movements on land which they will ultimately perform in the water. In addition to learning the correct movements and timing of swimming strokes they can also in this way acquire the correct method of breathing and relaxation. Land practice ensures that non-swimmers are not called upon to attempt for the first time new and difficult co-ordinated movements in such a strange and confusing medium as water. The movements used on land should be practised until there is perfect co-ordination of arms and legs, and all movements take place automatically without mental effort.

**5. Swimming strokes.**—Of all the accepted fundamental strokes, two are of special value from the military point of view. These are the breast stroke and the back stroke.

(a) *Breast stroke.*—This is the foundation of all swimming strokes, and for military purposes it is the most practical for the following reasons :—

- (i) It is easy to teach to large numbers simultaneously.
- (ii) It conserves the swimmer's energy, especially when he is wearing battle order. At the same time it provides power and reasonable speed.
- (iii) The swimmer is able to maintain clear vision.

(iv) It is the only really silent stroke, which is a decided advantage on those occasions when a silent crossing must be made.

(v) It is easily modified and made useful for any of the situations demanding swimming under water, swimming through oil or debris-covered water, swimming in rough water, or swimming so as to hold materials or weapons out of the water.

(b) *Back stroke*.—In the back stroke the body is maintained in the easiest floating position. It is the chief stroke employed in life saving owing to its very powerful leg action, which is used to facilitate towing. It is also the position in which, when necessary, clothing may be taken off comparatively easily.

NOTE.—African troops use a natural dog paddle method of swimming, and the instructor will probably find it desirable to develop this type of stroke with these troops.

**6. Special points to be observed in swimming.**—The following are of the utmost importance in swimming :—

- (a) Confidence.
- (b) Poise of body.
- (c) Relaxation.
- (d) Correct breathing.
- (e) Correct arm and leg movements.
- (f) Co-ordination of arm and leg movements and breathing.

**7. Method of teaching swimming strokes.**—The method of teaching the strokes is as follows :—

- (a) Land practice.
- (b) Water practice.

Once the practices on land are mastered, the instruction can be transferred readily to the water. Both the strokes mentioned in para 5 lend themselves readily to mass methods of instruction, which are necessary if large numbers are to be taught in a short time.

**8. Scheme of instruction.**—A well-planned scheme of instruction is essential if interest is to be maintained. A good scheme should include a suitable blending of instruction and coaching in the strokes with game-form activities. Instruction should be so organized that all the men in the class are actively employed throughout the lesson. A swimming lesson may usefully include the following :—

- (a) Mass and group instruction in the strokes, according to the needs of the class.

(b) A period for free practice with or without the assistance of a partner.

(c) Activities which help to maintain the recreative character of the lesson, and incidentally, to improve water sense.

Group or team work is of considerable value at all times. It is particularly effective when instructing a class of varying attainments, where the instructor is teaching beginners, and is, in the same lesson, coaching those who are already able to swim.

**9. Confidence practices.**—The instructor's first task before water practices can be commenced is to help the non-swimmer to overcome his fear of the water and to give him self-confidence. Fear is deep-rooted and is characteristic of most non-swimmers. In addition to being afraid of the water in general, the non-swimmer is often afraid of not having a solid object on which to hold, of the inability to regain the standing position and of the difficulty of breathing while swimming. Having once conquered his fear of shallow water he is often faced with the fear of deep water. The instructor needs tact, patience and sympathy in dealing with nervous non-swimmers. It is often of advantage in the initial stages of instruction if the instructor enters the water. It is also advisable that the class should be small and that the time in the water should be limited to a few minutes during the first attempts at water practice. To help the non-swimmer to overcome his fears, confidence practices should be introduced. These simple activities, besides helping him to overcome his fears, also encourage water sense (*i.e.*, the feeling of being at home in the water and ready to cope with any emergency or unexpected development that may arise). The following are examples of suitable confidence practices :—

(a) Jumping up and down holding the bath rail with both hands and later with one hand (Fig. 1).

(b) Walking in shallow water and holding rail with both hands.

(c) Walking away from the end of the bath in a rank holding hands, turning and coming back—later in twos or individually.

(d) Holding hands in a circle jumping up and down.

(e) Follow the leader in the shallow end of the bath.

(f) Travelling along the bath rail (Fig 2 (a)) or along a rope using the hands (Fig 2 (b)).

(g) Walking races.

(h) Ducking the face, while holding the rail (Fig. 3).

(i) Combining jumping up and down with ducking the head on given count—at first, holding the rail.



(a)



(b)

Fig 1

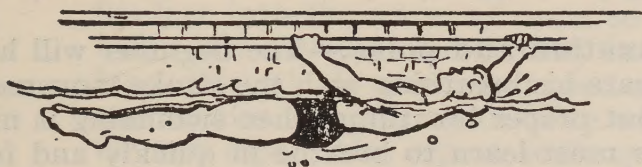
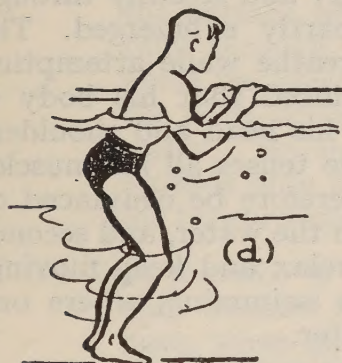


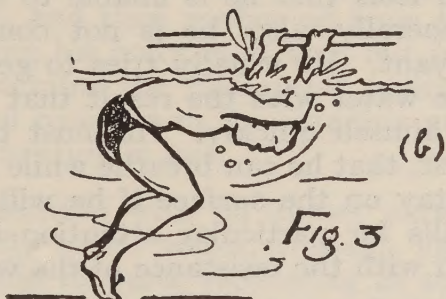
Fig. 2. (a)



Fig 2 (b)

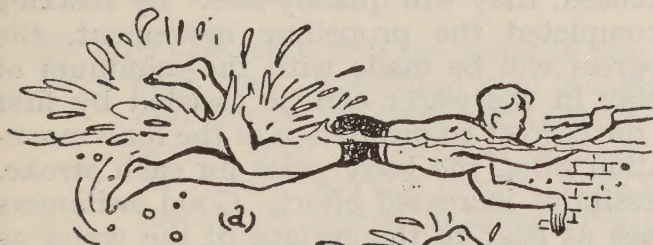


(a)

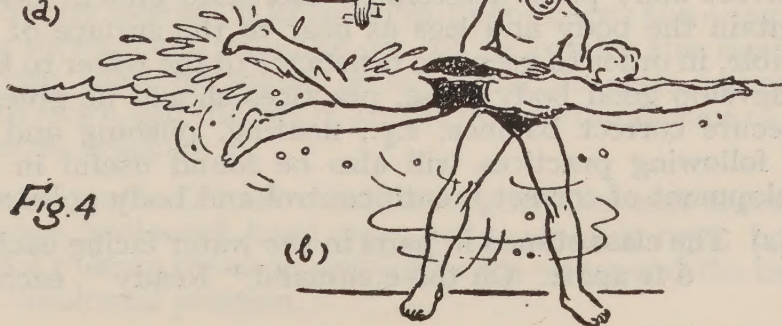


(b)

Fig 3



(a)



(b)

Fig.4

- (j) Opening eyes under water and picking up objects from the bottom of the bath.
- (k) Floating and kicking while holding the rail. Later, with human support away from the rail (Fig 4).

It is important at this stage to teach the method of regaining standing position from floating on the surface of the water. This is accomplished by raising the head out of the water, drawing both knees up under the body until in a sitting position, sweeping the arms downward, then straightening the legs and placing both feet apart on the bath floor. This method of accustoming beginners to the water, even with really nervous men, is one of the most important parts of their swimming training.

**10. Breathing, relaxation and poise.**—The beginner will have learned how to co-ordinate his breathing with the stroke movements in the land practices, but proper breathing when swimming is more difficult to master. He must learn to breathe in quickly and fully when his mouth is above the water so as to fill the lungs. This increases the buoyancy of the body and will assist the maintenance of correct body poise during the glide. He must learn to overcome the natural reluctance to breathe out strongly and steadily through the nose and mouth when the face is partly submerged. The beginner often feels that he is unable to breathe while attempting to swim. Generally, also, he is not convinced that his body is naturally buoyant. He usually tries to get his head and shoulders well above the water with the result that he tenses all his muscles and exhausts himself quickly. He must therefore be convinced of two things, first, that he can breathe while in the water, and second, that he can stay on the surface if he will relax and keep moving. Relaxation calls for particular attention in swimming, where one has to contend with the resistance of the water.

If muscles are always tensed, they will quickly tire. By relaxing them after they have completed the propelling movement, the maximum amount of progress will be made with the minimum of effort. The ability to relax in the water can be assisted by first mastering breath control, the correct co-ordination of the limb movements, and by concentration upon the body poise for each stroke. Incorrect body poise necessitates increased effort. Good swimmers maintain the body and legs as near to the surface of the water as possible, in order to keep the resistance of the water to the minimum. To develop good body poise, practices should be given which help to secure correct balance, *e.g.*, floating, pushing and gliding, etc. The following practices will also be found useful in assisting the development of correct breath control and body poise :—

- (a) The class stands in pairs in the water facing each other about 6 ft apart. On the command "Ready", each man inhales

deeply and quickly through the mouth only, and then partially exhales. On the command "Go", each man lowers his head, keeping his eyes open below the surface of the water and walks towards his partner, gripping him by the right hand. Then each man raises his head above the water and assumes the upright position. This practice should be repeated until all can do it easily.

- (b) The class stands in line in the water facing the instructor, each man placing his hands on his hips, thighs, or knees so that his chin is just above the surface. Each man then inhales quickly and deeply through the mouth only, lowers his face into the water at once, so that his eyes are just below the surface, then forcibly exhales all the air in his lungs through his mouth and nose, and then raises his head and inhales. Repeat again twice with only one inhalation for two dips. Also repeat while gradually increasing the number of dips, making each exhalation under water.
- (c) The class stands in the water in line with about 3 ft between men. Each man then raises both arms in front of him on the surface of the water. He then inhales quickly and fully through the mouth, lowers his face into the water, holds his breath, and then pushes off from the bottom of the bath, allowing his body to stretch out fully upon the water. He maintains the horizontal position for a few seconds only and recovers to the standing position before his forward momentum is lost.
- (d) This practice is identical with (c) above, except that each man exhales fully under water, through his mouth and nose, when gliding forward, recovering as soon as all the air is expelled.
- (e) The class stands in the water in line with about 3 ft between each man. Each man then inhales deeply, holds his breath and pushes on from the bottom while lying back on the water, head drawn down against the chest, back straight. He should hold this position for a few seconds only and then recover by raising his knees towards the chest, throwing his arms forward and standing up. In performing this floating exercise, the arms should be relaxed at the sides, palms of hands down and the entire arm as near to the surface of the water as possible.
- (f) In deeper water (about shoulder-height) the men travel a distance backward hand over hand, along a rope, being careful to keep the shoulders under the water and the body in a horizontal position.

- (g) In water of about shoulder-height.—Each man supports himself by a forearm resting on a wooden spar or float, the shoulders to be kept under the water, the body in a floating position.

NOTE.—In some of the above practices the men should work in pairs during the initial stages, one helping the other.

## CHAPTER 2

### BASIC SWIMMING STROKES

#### SECTION 1.—THE BREAST STROKE

**11. Land practice.**—In land practice for the Breast Stroke the arm movements are taught first, then the leg movements, and finally, co-ordinated arm and leg movements, and breathing. The practice should preferably be taken in the prone lying position across (or along) a bench. The special value of this position is that it most nearly resembles that which will be adopted later in the water. It is essential, however, that the men should adopt a comfortable position before commencing the movements. When arm and leg movements are combined, human support will be required, and the men will work in pairs, once practising the movements, while the other supports him. If benches are not available, the practices may be taken in the standing position, or sitting with the back supported against a wall.

#### 12. First Stage—arm movements and breathing

- (a) Prone lying position across bench, toes or knees resting on the floor, arms raised forward in line with the shoulders, palms downward, thumbs touching and fingers together (Fig 5 (a)).

From this position :—

- (i) Move the arms sideways and downward, without bending at the elbows or wrists, and with the hands slightly turned and cupped, to a position a little below and in front of the shoulder line. At the same time gently raise the head and breathe in through the mouth (Fig 5 (b)).
- (ii) Bend the arms and bring the hands together in front of and a little below the chin, palms downward, elbows close to the sides (Fig 5 (c)).

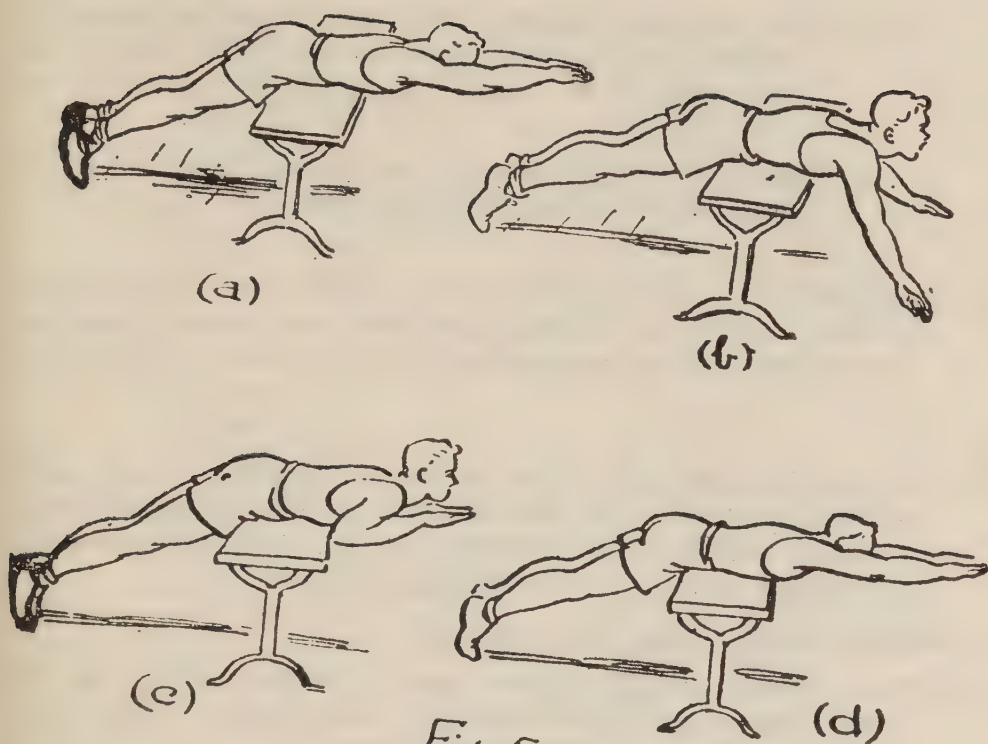


Fig 5.

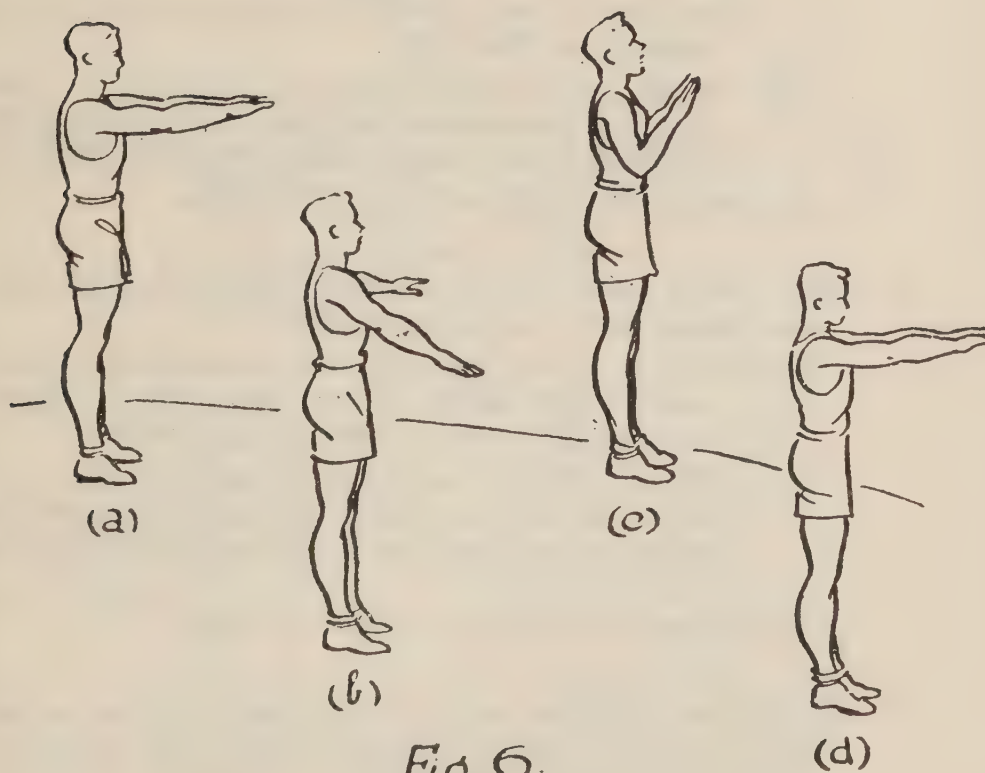


Fig 6.

(iii) With thumbs touching and fingers together, smoothly stretch the arms forward to their full extent. At the same time lower the head and breathe out (Fig 5 (d)).

(iv) Pause for the glide, making no movement of the limbs, and complete the breathing out.

*or*

(b) Stand with the arms raised forward in line with the shoulders, palms downward, thumbs touching and fingers together. From this position proceed as in (i)–(iv) above (Figs 6 (a)–6 (d)).

*or*

(c) Sit with legs straight, back supported against a wall, arms raised forward in line with the shoulders, palms downward, thumbs touching and fingers together. From this position proceed as in (i)–(iv) above (Figs 7 (a)–7 (d)).

### 13. Second stage—Leg movements

(a) Prone lying position across bench, hands resting on the floor, legs straight and together, toes pointed (Fig 8 (a)). From this position proceed as follows :—

(i) Bend the knees outward, heels together, feet well turned out (Fig 8 (b)).

(ii) Widely separate the legs by means of a circular outward movement and then bring them sharply together again, keeping them straight (Fig 8 (c)).

(iii) Pause for the glide through the water.

*or*

(b) Stand with hands on hips (Fig 9 (a)). Practise the leg movements with each leg alternately :—

(i) Raise one knee upward and outward until the heel touches the inside of the other knee. Turn the moving knee well outward (Fig 9 (b)).

(ii) Make a circular outward movement with the leg until the legs are widely separated and, without a pause, bring the extended leg against the stationary leg (Fig 9 (c)).

(iii) Pause for the glide through the water.

*or*

(c) Sit with straight legs and the back resting against a wall, or with the trunk inclined slightly backward, palms of the hands on the floor (Fig 10 (a)). Proceed as in (a) (i)–(iii) (Figs 10 (b) and 10 (c)).

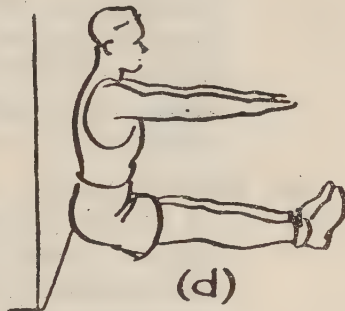
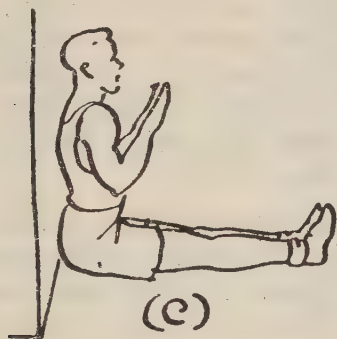
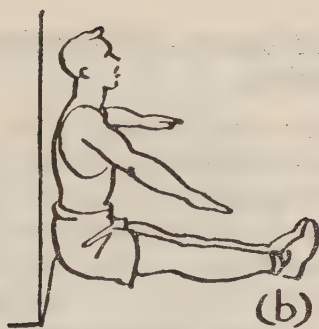
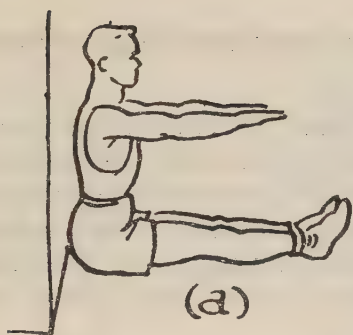


Fig 7.

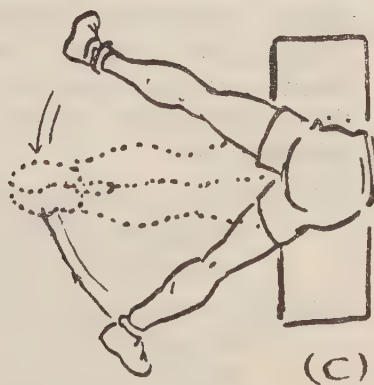
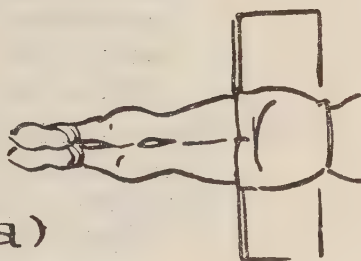


Fig 8.

#### 14. Third stage—Co-ordination of arm and leg movements, and breathing

(a) Men work in pairs, one performing the movements and the other sitting astride the bench at his side, supporting him by placing one hand under his chest and the other on his back. The performer lies across the bench with arms, body and legs in line, from extended fingers to pointed toes (Fig 11 (a)). The performer should then carry out the following movements :—

- (i) Move the arms sideways and downward, without bending at the elbows or wrists, and with the hands slightly turned and cupped, to a position a little below and in front of the shoulder line. At the same time, gently raise the head and breathe in through the mouth (Fig 11 (b)).
- (ii) Bend the arms and bring the hands together in front of and a little below the chin, palms downward, elbows close to the sides. At the same time, bend the knees outward, heels together, feet well turned out (Fig 11 (c)).
- (iii) Smoothly stretch the arms forward to their full extent, and sweep the legs round in a wide circular movement bringing them sharply together. At the same time lower the head and breathe out (Fig. 11 (d)).
- (iv) Pause—this represents the forward gliding movement in actual swimming. The whole body should be relaxed, and breathing out should be completed (Fig 11 (e)).

or

(b) Stand with the arms raised forward in line with the shoulders, palms downward, thumbs touching and fingers together (Fig 12 (a)). From this starting position the arm movements are first combined with those of the right leg and then with those of the left leg, and so on alternately as follows :—

- (i) Move the arms sideways and downward, as previously described, slightly raise the head and breathe in through the mouth (Fig 12 (b)).
- (ii) Bend the arms and bring the hands together in front of and a little below the chin, palms downward, elbows close to the sides. At the same time, raise one knee upward and outward until the heel touches the inside of the other knee (Fig 12 (c)).

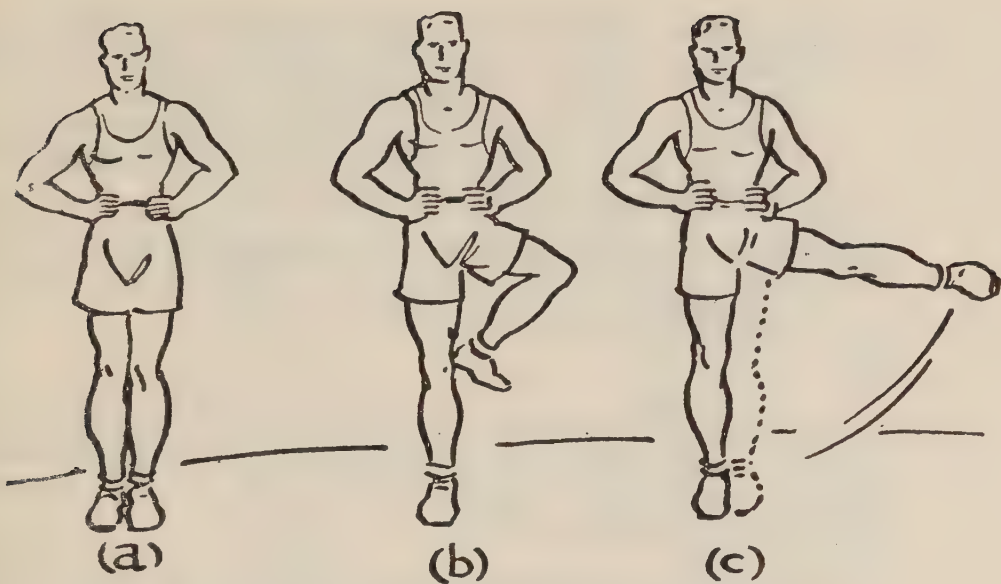


Fig 9.



Fig. 10.

- (iii) Smoothly stretch the arms forward and make a circular outward movement with the leg until the legs are widely separated, and without a pause bring the extended leg against the stationary leg. At the same time, move the head to its original position and breathe out (Fig 12 (*d*)).
- (iv) Pause—this represents the forward gliding movement through the water (Fig 12 (*e*)). Repeat the movements with the other leg.

*or*

- (*c*) Sit with the back supported against a wall, with the arms raised forward in line with the shoulders, palms downward, thumbs touching and fingers together (Fig 13 (*a*)). From this position proceed as follows :—
  - (i) Move the arms sideways and downward, as previously described, gently raise the head and breathe in through the mouth (Fig 13 (*b*)).
  - (ii) Bend the arms and bring the hands together in front of and a little below the chin, palms downward, elbows close to the sides. At the same time bend the knees outward, heels together, feet well turned out (Fig 13 (*c*)).
  - (iii) Smoothly stretch the arms forward to their full extent and sweep the legs round in a wide circular movement bringing them sharply together. At the same time move the head to its original position and breathe out (Fig. 13 (*d*)).
  - (iv) Pause—this represents the forward gliding movement through the water (Fig. 13 (*e*)).

NOTE.—The co-ordinated arm and leg movements may be found too difficult in the sitting position, unless sitting on a bench, box or slope.

**15. Water practice.**—It is assumed that the men will have had adequate land practice before commencing water practice for breast stroke swimming. In addition, wherever possible, all first lessons in the water should be preceded by a brief talk on the principles of breast stroke swimming, and a demonstration by a competent swimmer of the correct performance of the stroke. The men should then be taught to be thoroughly at home in and under shallow water and how to breathe correctly. If this is first done, the movements of arms and legs can then be taught in a comparatively short time.

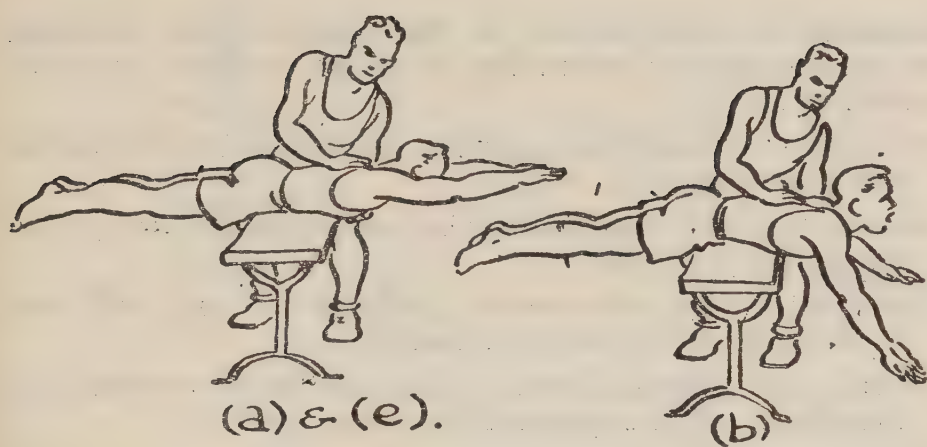


Fig. 11

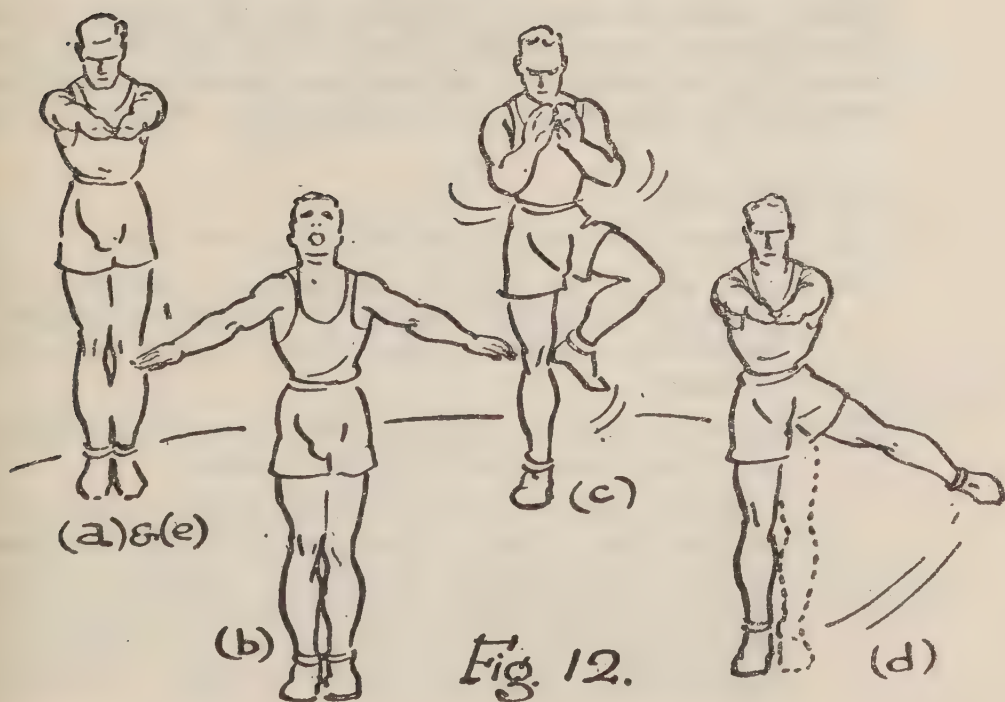


Fig. 12.

**16. Sequence of instruction in the water.**—The following should be the sequence of instruction in water practice for breast stroke swimming :—

- (a) *First stage.*—Confidence practices and breathing, relaxation and poise practices.
- (b) *Second stage.*—Arm movements in the standing and supported horizontal positions.
- (c) *Third stage.*—Leg movements, grasping the bath rail, and in the supported horizontal position.
- (d) *Fourth stage.*—Co-ordination of arm and leg movements and breathing, in the supported horizontal position.
- (e) *Fifth stage.*—Unassisted practice of (d) above.

## **17. Details of instruction**

- (a) *First stage.*—The confidence practices and the breathing, relaxation and poise practices are described in detail in paras 9 and 10 respectively. It is important, also, at this stage to teach the beginner how to regain the standing position from the horizontal position.
- (b) *Second stage.*—For practice of the arm movements the men should stand in the water at the shallow end of the bath, and with sufficient space between them to allow free movements of the arms. The arms and shoulders must be just below the surface of the water for this practice, and in shallow water it may be necessary for the men to bend their knees, or kneel on the bottom of the bath, to get low enough in the water. In this position the arm movements described in para 12 (a) are practised (Figs 14 (a)–14 (d)).

### *Coaching points*

- (i) Movements should be smooth and continuous.
- (ii) Hands should be slightly cupped and should exert pressure downward during the pulling movement, at the end of which they should still be in the angle of vision.
- (iii) Fingers should be kept together, and the shoulders and arms must remain under the water.

Later, the men should work in pairs, one supporting the other. The performer lies on the surface of the water, body fully extended, arms beyond the head, palms downward, thumbs touching, fingers together, soles of the feet as near as possible parallel to the surface of the water, ankles and knees



Fig 13.

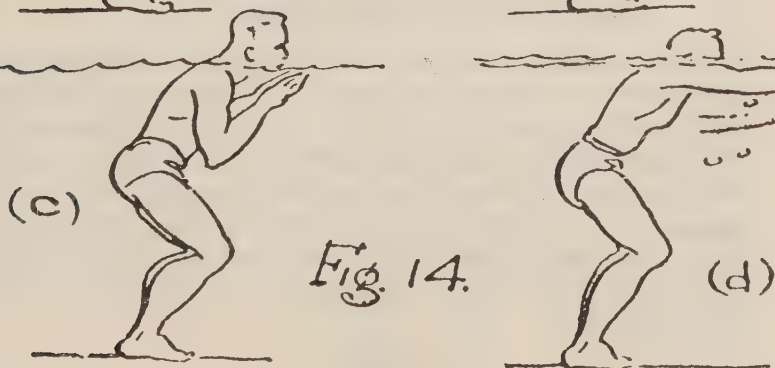
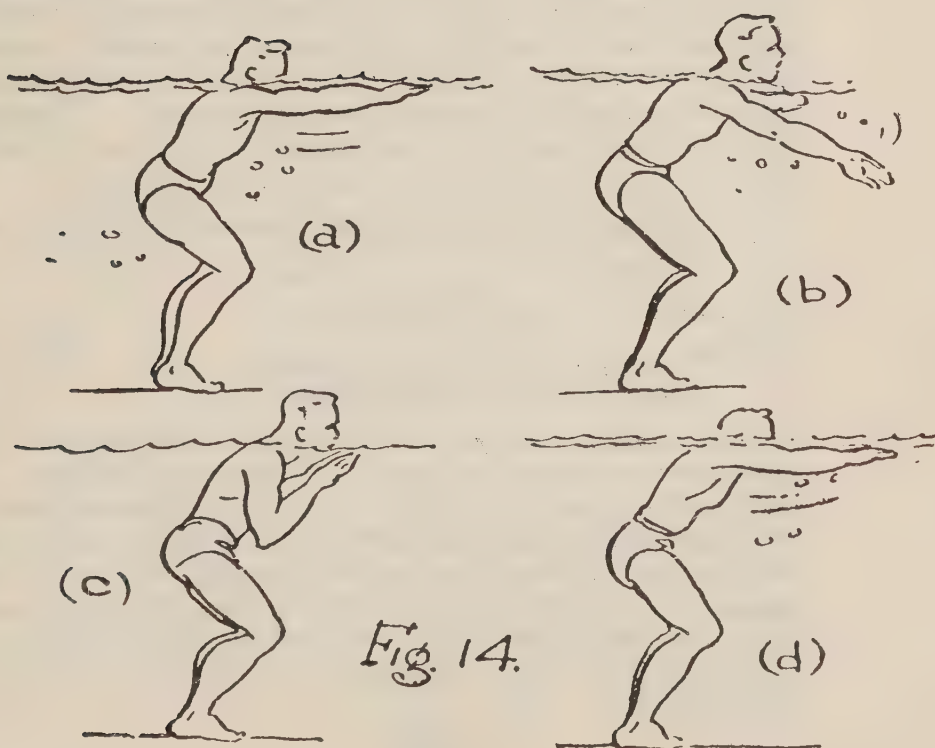


Fig 14.

touching. The supporter places one hand under the lower part of the performer's chest and the other on his back. The performer moves forward, using arm movements only, and co-ordinating his breathing with his arm movements (Figs 15 (a)–15 (d)).

- (c) *Third stage.*—When the arm movements and breathing have been thoroughly practised, the men should be taught the leg movements. If a rail is available round the bath the men should be lined up facing the wall in the shallow end with their arms stretched sideways to get their proper distance from each other. They then grasp the rail with one hand, placing the other hand 12 to 18 ins directly beneath it and against the bath wall. By pulling with the upper arm and pushing with the lower arm, they raise their bodies until they lie horizontally along the surface of the water (Fig 16). An alternative method is to grasp the rail with both hands in under grasp position, elbows bent and forearms pressed against the wall of the bath (Fig 17). In this position the legs can be lifted to the surface and remain there in comparative comfort.

In the horizontal position the men practise the leg movements as previously described in para 13 (a) (Figs 18 (a)–18 (c)). If necessary at this stage, they may work in pairs, the supporter standing behind the performer, grasping one foot in each hand, and guiding his leg movements correctly (Fig 19). The movements should be practised slowly at first and should be carefully corrected by the instructor. The “sweep” of the legs should be symmetrical and along the line of the body. The surface of the water should not be broken by the legs. The three most common faults in the leg movement are :—

- (i) Kicking both legs straight backward without separating them.
- (ii) Failing to bring them together.
- (iii) Bringing the heels only together, with the legs bent and the knees not touching.

It is most important to teach the men to bring their knees up sideways and outward with their heels touching. From this position the legs should be widely separated and then brought together as hard as possible, being kept straight all the time so that they come together with the thighs, knees, calves and ankles touching and the toes pointed. The men should be reminded that it is the action of the legs coming together hard that propels the body through the water.

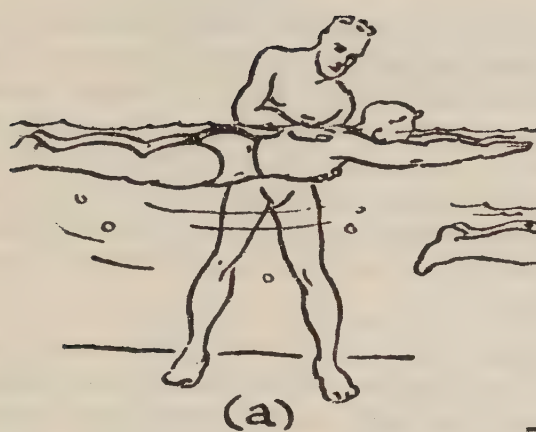


Fig. 15



Fig. 16



Fig. 17.

After practising the leg movements while grasping the hand rail, the men should practise these movements in pairs, one supporting the other (Fig 20). It is also useful at this stage to make use of any flotation gear (*e.g.* empty ammunition boxes, spars or wooden floats) which the men can hold on to with their hands and push in front of them in order to practise and develop the leg movements (Fig 21). They should also practise gliding with the addition of one or more leg movements.

- (d) *Fourth stage.*—This stage of instruction is concerned with the co-ordination of arm and leg movements and breathing. The men work in pairs, the performer lying on the surface of the water, body fully extended, arms beyond the head, palms down, thumbs touching, fingers together. The soles of the feet should be as near as possible parallel to the surface of the water, ankles and knees touching. The supporter places one hand under the lower part of the performer's chest and the other hand on his back. Only slight assistance is necessary to retain him in a steady horizontal position. The performer practises the complete stroke—arm, leg and breathing movements, as described in para 14 (Figs 22 (a)–22 (e)). Care must be taken to avoid excessive lifting of the head and over-arching of the back during the downward pull of the arms as this interferes with the correct poise of the body in the water. The correct timing of the stroke is very important, as a breast stroke lacking the correct timing will be jerky and will result in little or no progress through the water.

As this stage progresses, assistance and support should gradually be reduced until the men are able to make several unassisted strokes.

- (e) *Fifth stage.*—This consists of unassisted practice in shallow water with special attention to correct arm and leg movements, regulation of timing, correct breathing and the development of the forward glide, so that full advantage may be taken of the momentum derived from the propelling leg action. The next stroke should not be commenced until the forward glide is expended. At this stage, too, emphasis should be placed especially on the importance of relaxation, its relation to correct timing and its value in conserving the swimmer's energy.

## 18. Additional notes on breast stroke swimming

- (a) The fingers must be closed and hands slightly cupped during the sideways sweep of the arms, or pulling power will be lost.

*Fig. 18.*



(a)



(b)



(c)



*Fig. 19.*

- (b) The men should clearly understand the difference between propelling movements (those which move the body through the water) and recovery movements (those which position the swimmer for the next stroke).
- (c) The leg movements should not be referred to as a "kick," as this suggests a jerky, spasmodic kicking movement instead of a strong, smooth, sideways and outwards thrust, followed and combined with a rhythmic sweep inwards to bring the legs strongly together.
- (d) The arms should not be brought back further than in line with the shoulders.
- (e) The leg movements provide most of the propulsive power by squeezing the wedge of water from between the legs, when they are brought together strongly during the "sweeping" movement.
- (f) Toes should be kept pointed during the glide. If the feet are allowed to hang down they will offer resistance to the passage of the body through the water.
- (g) In order to obtain correct body poise in the water, the lower part of the face should be immersed and the breathing out take place under water.
- (h) Word counting, using suitable words such as "pull," "bend," "stretch," "glide," is more effective and expressive than number counting.
- (i) Once the men can swim the stroke reasonably well, they should be encouraged to try to swim the length of the bath in as few strokes as possible, holding on to the "glide" and breathing out under water for as long as possible each stroke.

## SECTION 2.—THE BACK STROKE

**19. Land practice.**—Land practice for Back Stroke may be performed in the back lying position along a bench with the lower leg projecting over the end, or in the standing position. The arm movements are taught first, then the leg movements and finally, arm and leg movements combined. While the arm movements may be practised in either the standing or lying positions, the leg movements can only be performed satisfactorily in the lying position, and then only when the trunk and upper thigh are supported high enough above the floor to leave room for the feet to drop in preparing for the leg movements.

**20. First stage—Arm movements.**—To practise the arm movements in the back lying position, the men lie on benches or

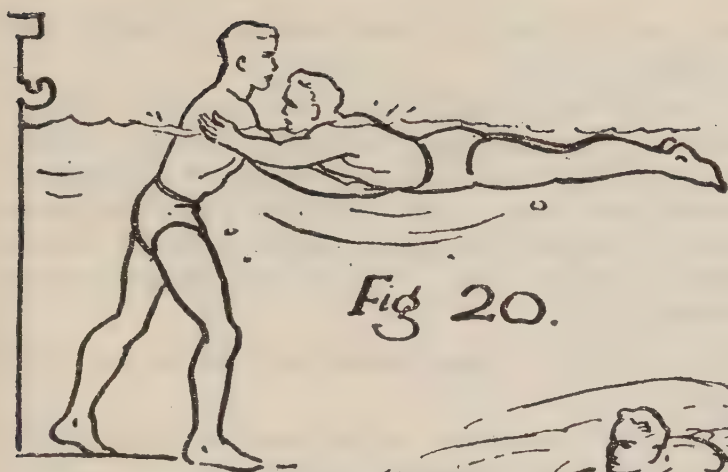


Fig 20.



Fig. 21.



Fig. 22.

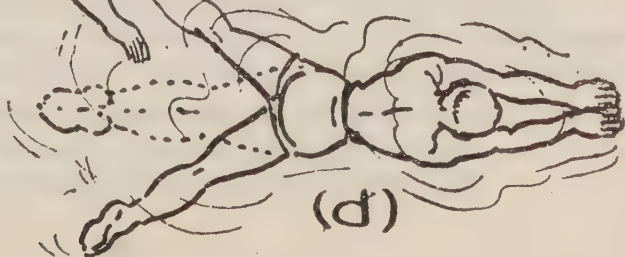
(a) & (e)



(b)



(c)



(d)

similar supports, arms to the sides, hands touching thighs and fingers together (Fig 23 (a)) :—

- (a) On the first count the straight arms are quickly raised forward-upward. The hands are brought together as they come in line with the forehead, the upward movement being continued until the arms are fully stretched, with thumbs touching, fingers together, palms upward, hands slightly cupped (Fig 23 (b)). This is the recovery part of the movement.
- (b) On the second count the relaxed arms and hands are held above the head.
- (c) On the third count the hands are cupped and turned slightly outward, and are swung sideways-downward in a half-circle until they again touch the thighs (Fig 23 (c)). This is the propelling action
- (d) On the fourth count the relaxed arms and hands are held in this position (Fig 23 (d)).

NOTE.—Owing to limited time in military swimming instruction, it may be desirable to substitute a simpler arm action. This may also be taught in the back lying position. On the first count the hands should be turned palm downward and the arms raised away from the sides to a position nearly in line with the shoulders. On the second count the hands should be cupped and turned, the arms being brought to the sides with a strong sweeping movement.

**21. Second stage—Leg movements.**—The men lie on benches, or similar supports, as for the arm movements, and practise the leg movements as follows :—

- (a) Keeping the thighs in line with the body, the feet are lowered from the knees at the same time as the knees open sideways, until the lower leg is approximately vertical (Fig 24 (a)).
- (b) Continuing the movement, the feet and lower legs are moved round outward, and without pause, with the toes pointed, in a strong and steady circular sweep until the legs have regained their starting position (Fig 24 (b)).

**22. Third stage—Combined arm and leg movements, and breathing.**—The starting position—back lying on benches or similar supports—is as in the first and second stages :—

- (a) On the first count the straight arms should be quickly raised forward-upward to the overhead position, as previously described. At the same time, the feet should be lowered,

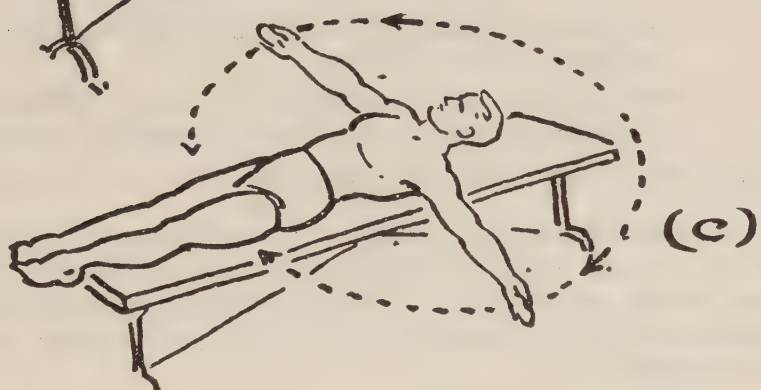


Fig. 23.

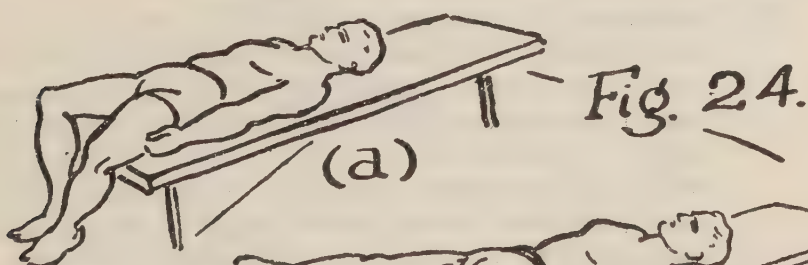


Fig. 24.



keeping the knees at least 12 ins apart, heels touching or nearly so, and ankles stretched. The leg movement should be continued in a steady circular sweep until the legs have regained their starting position (Figs 25 (a) and 25 (b)). Breathing in should also take place during this part of the movement.

- (b) On the second count the horizontal position is held—this represents the glide through the water (Fig 25 (c)).
- (c) On the third count the arms are swung sideways-downward in a half-circle until they again touch the thighs. Breathing out should take place during this part of the movement and the pause which follows (Fig 25 (d)).
- (d) On the fourth count there should be a pause in this position.

**23. Sequence of instruction in the water.**—The following should be the sequence of instruction in water practice for back stroke swimming :—

- (a) *First stage.*—Confidence practices.
- (b) *Second stage.*—Arm movements, with the toes hooked under the bath rail.
- (c) *Third stage.*—Leg movements, with human support, or individually using sculling movements with the arms.
- (d) *Fourth stage.*—Co-ordination of arm and leg movements.

**24. Details of instruction.**—It is assumed that the men have gained a certain amount of proficiency in swimming before practice of back stroke swimming is begun. It is also assumed that they have mastered the land practices for back stroke before attempting the water practices.

- (a) *First stage—Confidence practices.*—

- (i) *Horizontal floating position.*—Men learning to swim on the back often experience difficulty in accustoming themselves to lie on the back on the surface of the water, because of the fear that water will enter their ears. In order to get accustomed to this position, which is the basis of correct body poise and buoyancy, the men should work in pairs, one supporting the other in the horizontal floating position. Support is given by placing one hand on the chest and the other under the back (Fig 26). They should also practise individually, hooking the toes under the bath rail and then gradually straightening out until the body is supported horizontally on the surface of the water (Fig 27). Another useful practice is travelling backward in horizontal floating position along a rope, keeping the shoulders in the

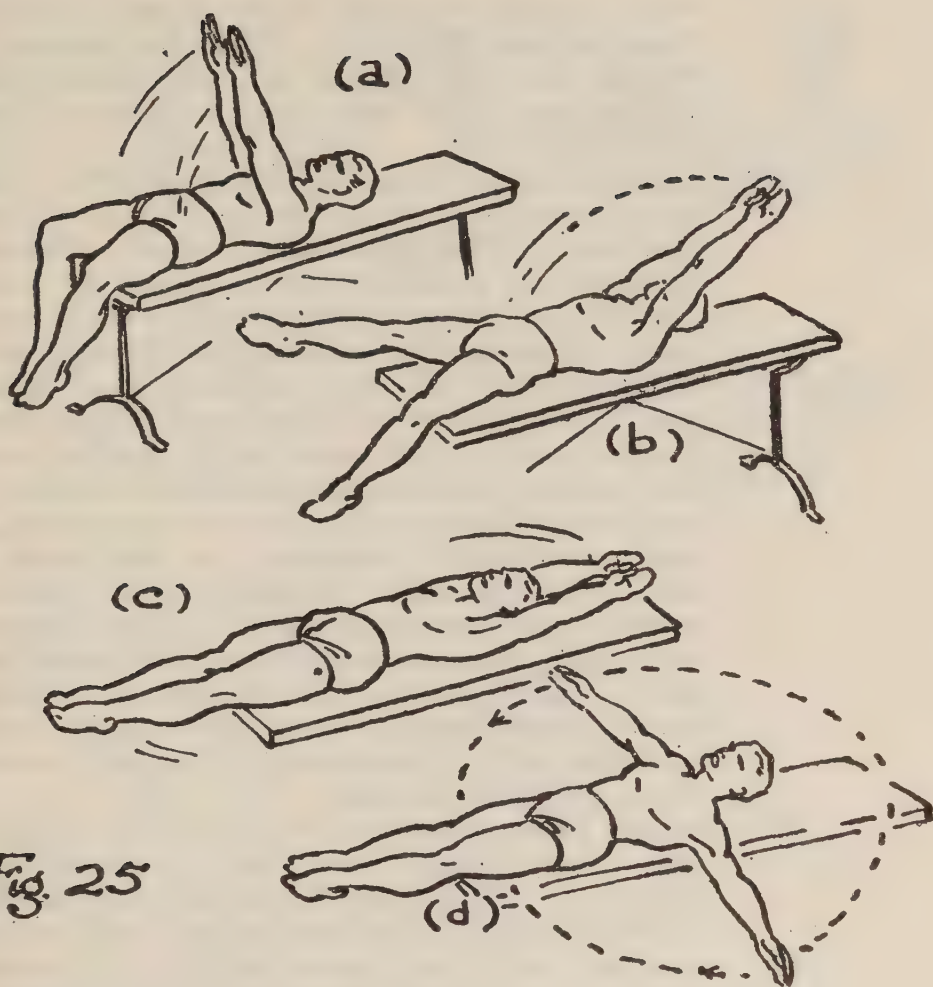


Fig. 25



Fig. 26.



Fig. 27.

water and taking short paces, using the hand over hand method (Fig 2 (b)). When the necessary confidence has been gained the men should practise gliding across the bath from a push-off from the bath wall.

(ii) *Sculling*.—The men should be taught how to remain on the surface of the water in a horizontal floating position by sculling with the hands. This is best practised by hooking the toes under the bath rail with the body lying backward fully extended without any bending at the knees, hips or neck, and with the arms close to the sides of the body. From this position the hands are carried about six inches from the body and moved to and fro, by turning the wrists and pressing with the palms against the water, in a series of propulsive and recovery movements. The palms are turned downward as the hands move away from the body. Varying degrees of power are possible by altering the angle of the hands, the amount of pressure applied, and the speed of the action. After a little of this practice the men should be able to release their toes from under the bath rail and float away from the side of the bath using arm sculling movements only.

(iii) *Recovery from a floating to a standing position*.—This feat, once mastered, greatly aids in the elimination of fear. It may be done by sculling with the hands, allowing one leg to sink, and at the same time raising the head, which will cause the other leg to sink. A vigorous stroke backward with both hands will bring the swimmer into a vertical position with both feet on the bottom of the bath.

(b) *Second stage—arm movements and breathing*.—To practise the arm movements the men should take up the horizontal floating position with the toes hooked under the bath rail. From this position, the straight arms are raised forward-upward to the overhead position as previously described in para 20. After a short pause, the arms, with the hands turned outward and slightly cupped, are swept vigorously sideways-downward until again at the side of the thighs (Figs 28 (a)–28 (d)). After a short pause the movements are repeated. Breathing in should take place during the forward-upward movement of the arms, and breathing out during the sideways-downward movement.

NOTE.—If the modified arm stroke only is being taught, as described in the note after para 20, this may also be practised in the manner described above.

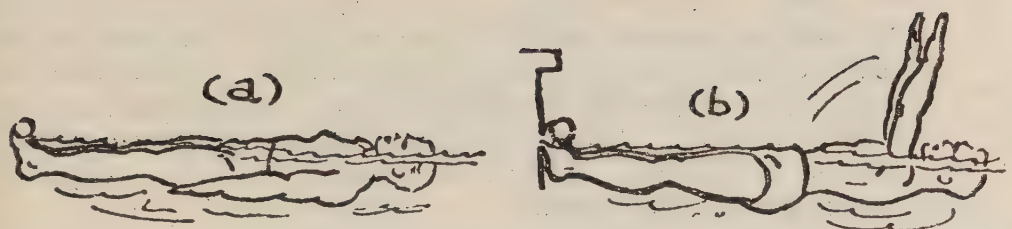


Fig. 28.

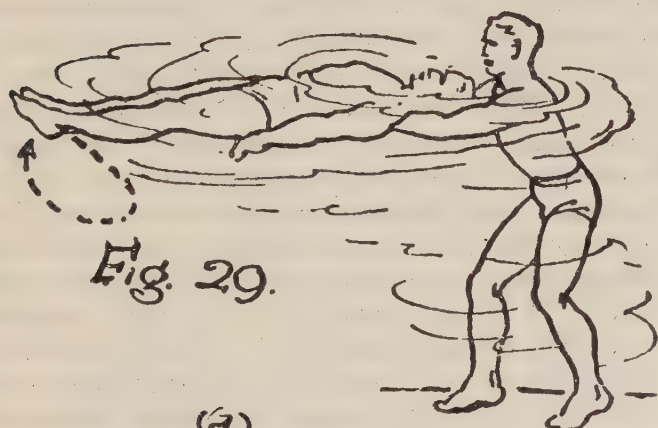
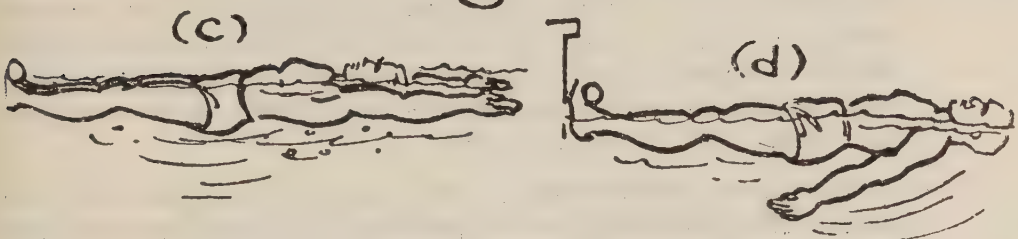


Fig. 29.

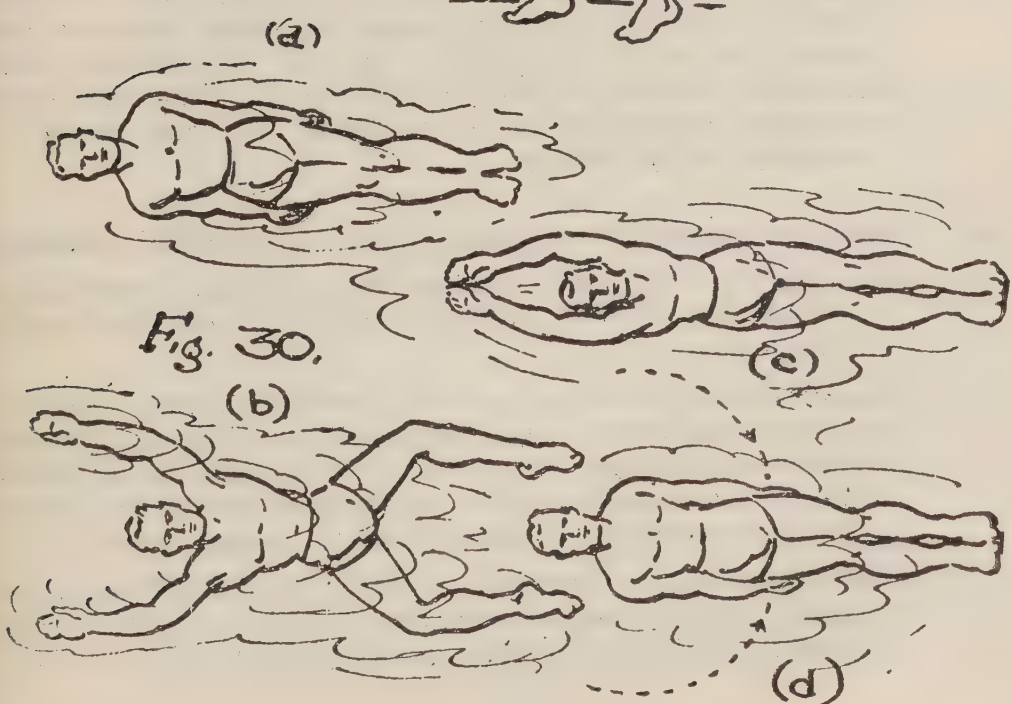


Fig. 30.

- (c) *Third stage—leg movements.*—The class should first practise the leg movements slowly while sitting on the bath side. They should then practise the movements, as described in para 21, in the water, working in pairs, one supporting the other (Fig 29). Later, each man should practise individually, supporting himself horizontally on the water by sculling with the hands.
- (d) *Fourth stage—Co-ordination of arm and leg movements, and breathing.*—It is most important to cultivate the correct timing of the arm and leg movements, otherwise the whole stroke is upset. From the horizontal floating position the movements as described in para 22 should be thoroughly practised (Figs 30 (a)–30 (d)).

NOTE.—As swimming on the back is necessary in life saving it is absolutely essential that it should be practised without the use of the arms. At first, to make sure that the hands and arms are not being used unconsciously, the swimmer should either carry some small object with both hands (as in the First Method of Life Saving) or place his hands on his hips. The aim should be to develop a leg movement which is powerful in propelling the body in a forward direction, rapid in action so that movement through the water is smooth and almost constant, and one which is able to be maintained over a considerable distance without undue fatigue. It is not possible to do the complete leg movements as previously described, during rescue work, since the legs of the person being rescued are in the way, but in place of the finishing movement the lower legs and feet should be made to perform circular movements continuously, thus compensating for the lack of full power normally derived from the complete leg movements by continuity of leg action.

## **25. Additional notes on floating in the horizontal position**

- (a) The ability to float with the minimum of limb movement is of great value to the soldier and amply repays him for the time spent in practice.
- (b) The easiest way is to lie in a comfortable, almost horizontal position on the back, using only the quietest and smoothest of limb movements. Gentle, easy sculling with the hands with an occasional, almost lazy movement of the legs is all that is necessary to keep afloat for a long period.
- (c) The development of the glide in back stroke swimming is a useful means of helping the swimmer to master floating, as it teaches correct body poise, relaxation and buoyancy.

## 26. General notes for instructors

- (a) With a good instructor patience is not a virtue but common sense, for he knows all the steps which must be gone through in order to learn to swim.
- (b) It is important to avoid the smallest step which might lead to a dislike of the water on the part of the learner, and it is just as important to inculcate in him the ambition to accomplish new goals.
- (c) The good instructor is an expert analyst. He can detect immediately various faults of the learner and he knows how to correct them.
- (d) Swimming involves the breaking of many movement habits and the forming of new ones. The model for the creation of a new movement can best be demonstrated on land. Land practices should therefore be given an important place in the scheme of instruction, everything possible being practised on land before it is taken in the water.
- (e) Class instruction produces the quickest results when a number of non-swimmers have to be taught at one time. With a class of normal size it is a waste of time to try to teach swimming to each man individually.
- (f) Exhilaration and natural excitement tend to cause undue noise and shouting which interfere with enjoyment and may even be a source of danger during swimming instruction. Men must therefore be taught that the whistle is the signal for instant silence.
- (g) Long explanations should be avoided when learners are in the water. The time for a full explanation of strokes is during land practice, or before the men enter the water.
- (h) It is difficult to lay down a hard and fast rule as to when an instructor should go into the water. Class instruction can best be given from the side of the bath. A good demonstration in the water of the stroke or movement to be practised, however, is valuable, since it gives the men a mental picture of what to aim at during practice. In the early stages of instruction it may be necessary for the instructor to spend some part of each lesson in the water with the men, moving about from man to man giving close and individual attention to each.
- (i) All water practice must be purposeful. It will often be found useful in the initial stages for men to work in pairs and to help each other. Swimmers may usefully be employed to help with the coaching of non-swimmers and for demonstration purposes.

- (j) A well prepared and progressive scheme is essential for the maintenance of interest. It is important that all members of the class should be actively employed throughout the lesson.
- (k) Appropriate activities of a game-like nature help to maintain the cheerful spirit which should characterize swimming instruction. The good instructor will always be prepared to introduce such activities as the need arises.
- (l) The learner should be taught to appreciate which movements are movements of propulsion and which of recovery. He should be encouraged from the beginning to relax during the resting period of the stroke.
- (m) Correct breathing and good rhythm are essential for endurance, and later for speed. Deep inhalation increases body buoyancy.
- (n) Swimming in winter should be encouraged. Public baths are then less congested and instruction in consequence is less liable to interruption.
- (o) Men should receive instruction in bath hygiene so that they may look upon it as a duty to take their share in maintaining the bath at a high standard of cleanliness. Before entering the bath each man should make use of the lavatory, footbath and showers.
- (p) The instructor must guard against the men becoming cold. At first, the time spent in the water should be about 15 minutes. This may be gradually increased to about 30 minutes. Shivering and blue lips are signs of over exposure, and the men concerned should come out of the water and immediately dry themselves and dress.
- (q) Men should not be allowed to enter the water when overheated after vigorous exercise.
- (r) Where instruction is given in the sea, a river or other open air bathing place special safety precautions must be taken. Adequate life-saving personnel and apparatus must be available for immediate use if necessary.

### SECTION 3.—SUMMARY OF LESSONS FOR NON-SWIMMERS

27. It is assumed that instruction in the various land practices has been given before the water practices are commenced.

#### 28. Breast stroke

##### (a) *First stage*

- (i) Explanation of whistle signals, indication of the deep and shallow ends of the bath.

- (ii) Entry into water (more confident men first), walking down steps into water. Walking round shallow end of bath holding rail.
- (iii) Confidence practices and breathing exercises (paras 9 and 10).
- (iv) Horizontal floating position, face downward, with support from partner (men work in pairs, the supporter with one hand on the chest and one on the back of the performer).
- (v) Method of regaining standing position from horizontal floating position, face downward.
- (vi) Free practice of floating, face downward, and of pushing off from side or bottom of bath and gliding.
- (vii) Jumping into water from sitting on the bath side, turning and holding the rail if necessary.

(b) *Second stage*

- (i) Arm movements (para 17 (b)).
- (ii) Arm movements co-ordinated with breathing.
- (iii) Working in pairs, one supporting the other—arm movements co-ordinated with breathing.
- (iv) Jumping into water from crouch or standing on side of bath.

(c) *Third stage*

- (i) Leg movements, holding the bath rail (para 17 (c)).
- (ii) Working in pairs, one supporting the other—leg movements.
- (iii) Working individually, supporting the hands on empty ammunition boxes, spars or wooden floats—leg movements.
- (iv) Gliding and one (or more) leg movements.
- (v) Jumping into water from side of bath.

(d) *Fourth stage*

- (i) Working in pairs, one supporting the other—co-ordination of arm and leg movements and breathing (para 17 (d)).
- (ii) Gliding practice, followed by one (or more) complete strokes.

(e) *Fifth stage*

- (i) Unassisted practice with special attention to correct arm and leg movements, regulation of timing and correct breathing (para 17 (e)).
- (ii) Gliding practice and using as few strokes as possible to swim a breadth (length) of the bath.

- (iii) Jumping into water (deep end of bath) and from gradually increasing heights.

## 29. Back stroke

### (a) *First stage*

- (i) Horizontal floating position on the back, men working in pairs, one supporting the other, or individually, hooking the toes under the bath rail (para 24 (a)).
- (ii) Travelling backward in horizontal floating position along a rope using the hand over hand method (para 24 (a)).
- (iii) Horizontal floating position, toes hooked under the bath rail—sculling with the hands (para 24 (a)).
- (iv) Method of regaining standing position from horizontal floating position (para 24 (a)).

### (b) *Second stage*

- (i) Horizontal floating position, toes hooked under the bath rail—arm movements (para 24 (b)).
- (ii) Horizontal floating position—sculling with the hands (para 24 (a)).

### (c) *Third stage*

- (i) Sitting on bath side—leg movements (para 24 (c)).
- (ii) Working in pairs, one supporting the other in horizontal floating position—leg movements (para 24 (c)).
- (iii) Horizontal floating position—sculling with the hands, and leg movements (para 24 (c)).
- (iv) Horizontal floating position, hands on hips—leg movements.

### (d) *Fourth stage*

- (i) Working in pairs, one supporting the other in horizontal floating position—co-ordination of arm and leg movements, and breathing (para 24 (d)).
- (ii) Unassisted practice with special attention to correct arm and leg movements, regulation of timing and correct breathing (para 24 (d)).
- (iii) Continued practice of back stroke swimming using legs only (Note to para 24).

## SECTION 4.—STANDARD SWIMMING TESTS

30. Test No. VII of Standard Physical Efficiency Tests is as follows :—

Swim 30 yards in fresh, or 50 yards in salt, water dressed in denims and remain out of depth for 2 minutes.

It is not necessary to remain floating during this period ; treading water and swimming around are permissible.

Where facilities are available and subject to medical category and the necessary preliminary training, as laid down in ACI 764 of 1951, this test is to be carried out by recruits, not before their tenth week of training, and annually thereafter by all ranks who do not carry out battle efficiency tests.

(For Battle Swimming Tests, *see* para 47)

## CHAPTER 3 BATTLE SWIMMING

### SECTION 5.—THE APPLICATION OF SWIMMING TO WAR

31. Recent operations have proved, if proof were needed, that even a non-swimmer must be able to cross water obstacles confidently and quickly. These obstacles are sometimes a major problem in operations, and too much emphasis can scarcely be placed on the importance of every trained soldier of the Field Forces receiving instruction in battle swimming.

32. It may only be possible, in the limited time available, to give the strong swimmers practice and coaching in swimming breast and back strokes while wearing battle order, and the weak swimmers practice in the construction and use of improvised aids to assist them to keep afloat.

33. It has previously been pointed out in para 3 that the crossing of water by a unit is essentially a team operation, and all training in battle swimming should be directed to this end, in order that the unit to which the men belong will be able to negotiate water obstacles with confidence. The capabilities of each individual should be known to his immediate commander, who during training should combine the skill of all to ensure a quick and safe crossing of water obstacles. It is also important that battle swimming should be practised at night.

34. So far as possible, instruction in battle swimming should include :—

- (a) Swimming while wearing a gradually increasing amount of clothing and equipment.
- (b) Jumping into water from progressively increasing heights.

- (c) Methods of life saving, and the Schafer method of resuscitation.
- (d) Climbing rope ladders and scrambling nets, while wearing wet clothing and equipment.
- (e) Correct use of such aids as spars, boxes, lifebuoys, etc.
- (f) Method of making a bundle of clothing and equipment and of ferrying it across water.
- (g) Surface diving and under water swimming (short distances only).
- (h) Method of swimming when river weeds or seaweed are encountered.
- (i) Silent swimming, and swimming with limited use of limbs.
- (j) Vertical floating and treading water.
- (k) Removal of clothing while in the water.
- (l) Method of swimming when floating oil is encountered.

## SECTION 6.—TRAINING

### 35. **Swimming while wearing clothing and equipment.**—

Swimming while wearing battle order requires a strong and vigorous stroke. The action is quickened, and there is no restful glide. There is a comparatively early onset of fatigue, due to great and rapid expenditure of energy. Clothing, which at first appears to assist buoyancy, ultimately becomes a great encumbrance, due to the amount of water absorbed. It is, therefore, necessary to formulate a carefully graduated and progressive system of training, even for strong swimmers, and to pay careful attention to the safety precautions enumerated in Section 9. The swimmer's power of endurance must not be overtaxed, and only short distances in light clothing should be attempted at first. When swimming in battle order, breast stroke is the most practicable stroke for the reasons already given in para 5 (a). Gradual progression according to the ability of the individual should be the keynote of the training. The following five stages of progressive instruction are recommended :—

- (a) *First stage.*—Denim clothing only (Fig 31). A quiet, smooth, steady stroke should be performed with particular attention to co-ordinated arm and leg movements, and breathing. It is possible in this stage to keep the body and legs close to the surface of the water, and to glide reasonably well at the end of each stroke.
- (b) *Second stage.*—Denim clothing, boots and anklets (Fig 32). The addition of the boots will make a slightly quicker stroke necessary. The body and legs will not lie quite so close to the surface of the water as in the first stage. The quicker stroke will also reduce the distance of the glide.



Fig. 31.



Fig. 32.



Fig. 33.



Fig. 34.



Fig. 35.



Fig. 36.

(c) *Third stage.*—Denim clothing, boots, anklets and light equipment (Fig 33).

(d) *Fourth stage.*—As for the third stage, with the addition of the steel helmet strapped to the shoulder (Fig 34).

NOTE.—The steel helmet, except when swimming near to enemy positions, should always be worn with the chin strap fixed underneath the shoulder strap. When worn, however, the chin strap should either be across the forehead or at the back of the head. It should never be worn under the chin, as there is the danger of pressure from the water forcing the helmet to slip off the back of the head, thus drawing the chin strap tightly across the throat and so choking the swimmer.

(e) *Fifth stage.*—Denim clothing and battle order with the rifle slung horizontally across the back, resting on the small pack, the sling passing under the armpits and across the chest. The steel helmet should be worn in the manner described in sub-para (d) above (Fig 35).

The stroke must be strong, quick and continuous. The position of the body and legs in the water is more vertical than in the previous stages of progression, and there is little or no glide at the end of the stroke.

**36. Entering water clothed and equipped.**—Practice must be progressive and at first only denim clothing (without boots and anklets) should be worn, items of clothing and equipment being gradually added. The following important points should be stressed :—

(a) Always enter at water level if possible, and wade out quietly until the water is about chest-height before commencing to swim (Fig 36).

If this is not possible, jump in feet first, body straight and legs together (Fig 37), and, if necessary, with one hand covering the nose. The take-off should be from one foot. This method is practical and safer than diving, especially when the depth is not known, as the entry into the water is more easily controlled.

Diving while wearing clothing and equipment is impracticable, and there is always the danger of striking the head on some floating object, or the river bed in shallow water.

(b) When fully equipped, the rifle is slung across one shoulder and is held in position by pressing firmly with the fork of the hand at the lower sling swivel so that the butt is held firmly against the side of the leg (Fig 38). This is necessary to guard against the possibility of the muzzle hitting the back of the head as the body enters the water.

Fig. 37.

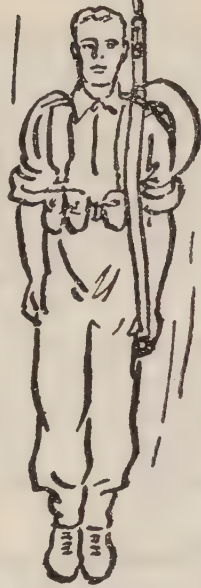


Fig. 38

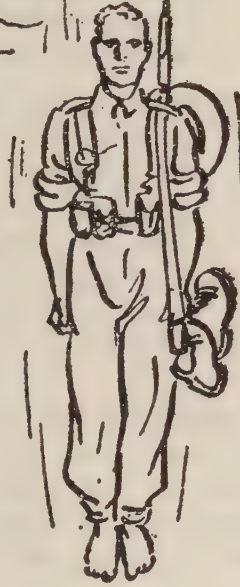


Fig. 39.



Fig. 40.



Fig. 41.

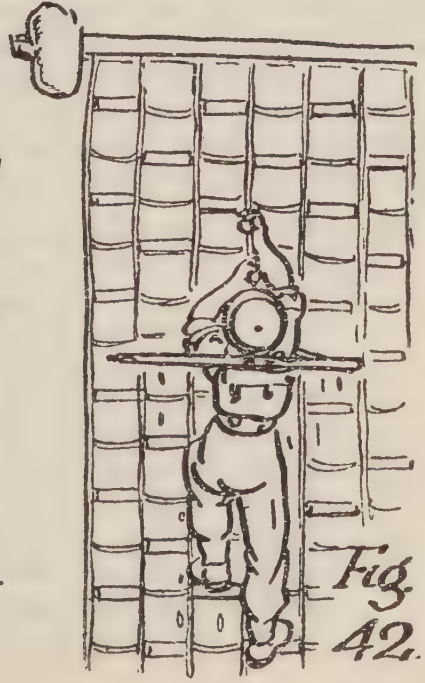


Fig. 42.

- (c) The steel helmet is strapped to the shoulder (Fig 34) and not worn on the head. The impact of the water may cause serious injury to the neck if the helmet is worn with the strap under the chin.
- (d) Under active service conditions, if there is the possibility of remaining in the water for a long time, the boots should be removed and after being fastened together by means of the laces, one boot should be passed between the rifle butt and the sling before entering the water (Fig 39). The driving force in swimming comes from the legs, and if their movements are impeded by the weight of boots, the onset of fatigue will be much quicker.

**37. Methods of life-saving and resuscitation.**—It is important that every soldier should know how to help a weak or tired swimmer, or one who is in distress. The method of resuscitating the apparently drowned should also be thoroughly known. Several methods of rescue are described in detail in Chapter 5.

**38. Climbing rope ladders and scrambling nets.**—Climbing rope ladders or scrambling nets when wearing wet clothing and equipment is by no means easy, and needs considerable practice. This practice should be carefully progressed in regard to the amount of clothing and equipment worn. Useful preliminary training may first be given in the gymnasium, or by means of rope ladders and scrambling nets suspended from trees. During this preliminary training on land denim clothing, with a gradually increasing amount of equipment up to battle order, should be worn. The water practices should follow the five stages of progression given in para 35. At first, ascending and descending only should be practised. Later, the men should swim a short distance before ascending the ladders or scrambling nets. Rope ladders may be climbed in several ways, but the following two methods are recommended :—

- (a) *Climbing up the front.*—Grasp the side ropes with arms at full stretch and stand with both feet on the same rung. To climb, first move the feet two rungs in three steps, then move the hands until the arms are again fully stretched, and so on, first the feet, then the hands. It is essential to keep the body close to the ladder and the knees turned well out (Fig 40). Descending is carried out in a similar manner. Another useful method of climbing up the front of a rope ladder is to stand with both feet on the same rung, but with the instep of one foot on the middle of the near side, and the heel of the other foot on the far side of the rung, having passed round and in front of the rope. Climb as if climbing an ordinary ladder.

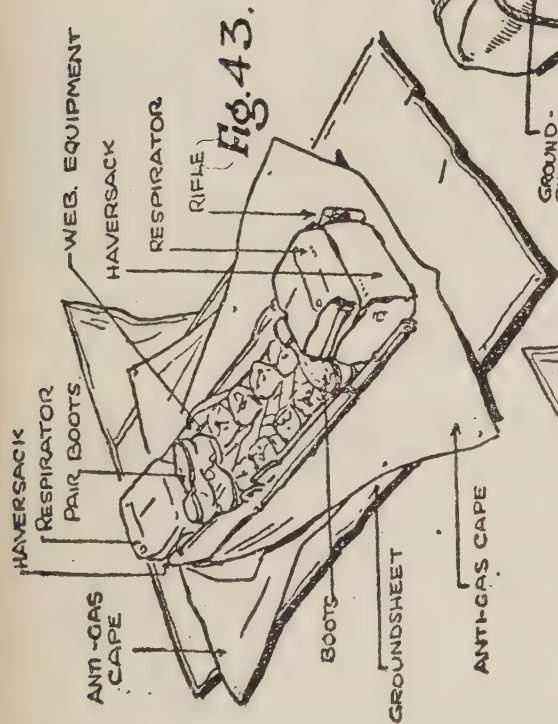


Fig. 43.



Fig. 44.

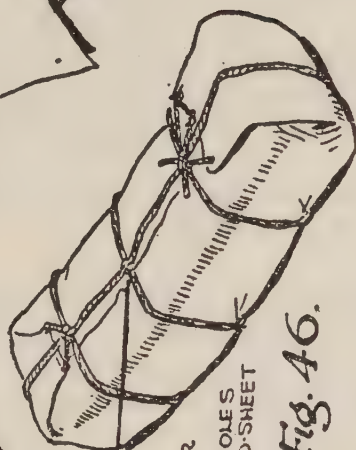


Fig. 46.

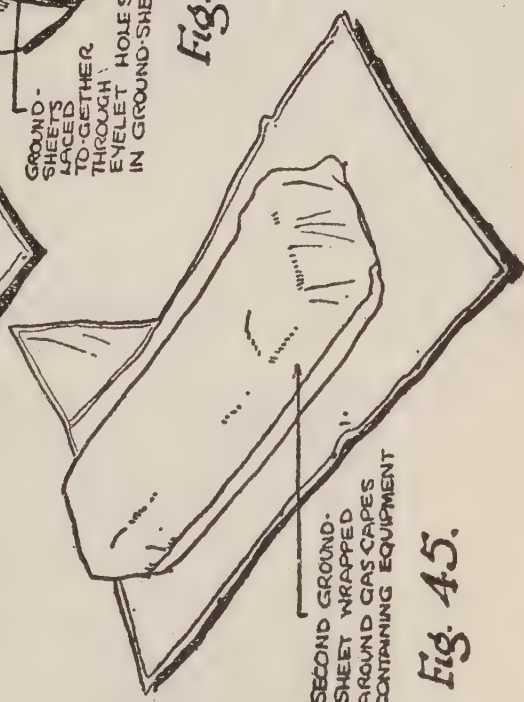


Fig. 45.

Fig. 47.



(b) *Climbing up the side.*—It is sometimes possible to climb up the side of a rope ladder, and this is probably the best method when men are wearing battle order. Stand at the side of the ladder and grasp the rope with each hand one immediately above the other. Similarly, place each foot on a rung, one immediately above the other, feet turned outward. To climb, move either the same or the opposite hand and foot together, climbing rung by rung. It is important that the hands and feet should always move together, and the body must be pulled close to the side of the ladder (Fig 41). To climb the scrambling net, move hand over hand up, or hand under hand down one vertical rope, feet on the rungs on either side of the same rope, the same or the opposite hand and foot moving together (Fig 42). Clumsy, unskilled climbing of scrambling nets by untrained men causes confusion and delay when many are climbing at the same time. The method of climbing described above is quick and efficient.

**39. Correct use of improvised aids.**—The correct use of improvised aids is described in Chapter 4.

**40. Method of making a bundle of clothing and equipment and of ferrying it across water.**—The method consists in wrapping the clothing and equipment of either one or two men in a groundsheet and anti-gas cape in such a way as to form a bundle. By using this method the water crossing, especially if a comparatively long one, can be made with the minimum of fatigue, and the swimmer will have dry clothing and equipment to put on when he reaches his destination, provided, of course, that the bundle has been securely packed and correctly tied. If a groundsheet is not available, the anti-gas cape can be used, but care must be taken to see that the ventilation holes are kept at the top of the bundle, the tapes and cord being utilized to fasten it. In addition to being a means of ferrying clothing and equipment across water obstacles, the bundle can also be used as an improvised aid to support weak swimmers.

(a) *Double bundle.*—To make a double bundle the men work in pairs, and wrap up both sets of clothing and equipment. The weight of the bundle is about 80 lb. When floating it draws approximately 3 ins of water and will have about 4 ins to 6 ins of free-board. It is remarkably steady, owing to the ballasting effect of the rifles, and it has about 30 lb reserve buoyancy. The bundle can be constructed by trained men in daylight in 8 to 10 minutes, and by night in about 15 to 20 minutes. It is essential that men should be adequately trained to construct the bundle in the dark. The method of construction is as follows :—

Fig. 48.

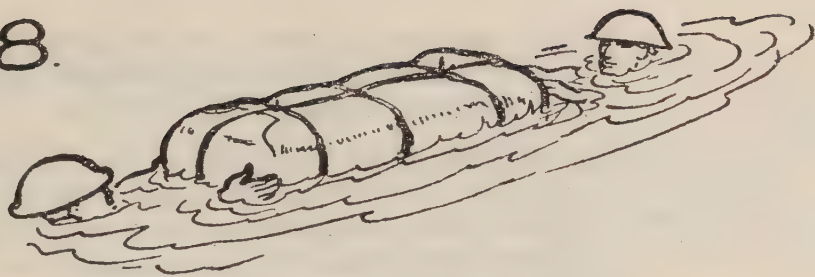


Fig. 49.

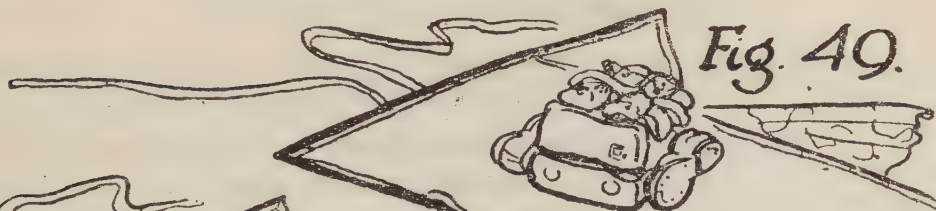


Fig. 50.

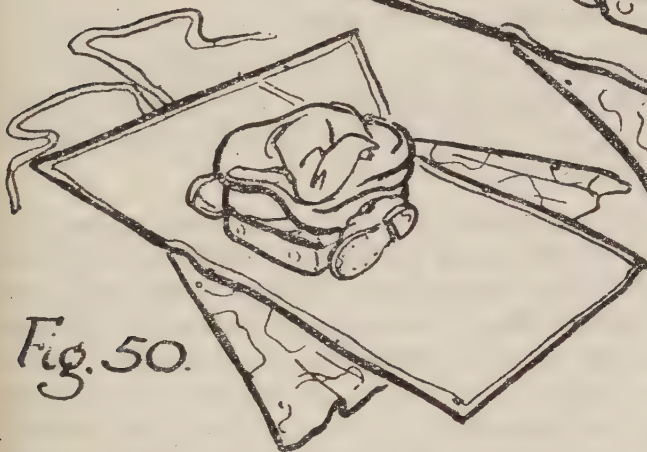


Fig. 51.

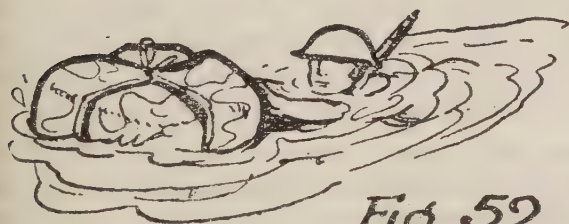


Fig. 52

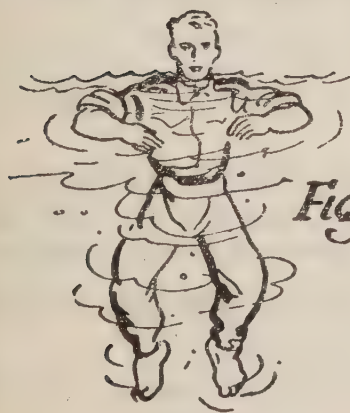


Fig. 53.

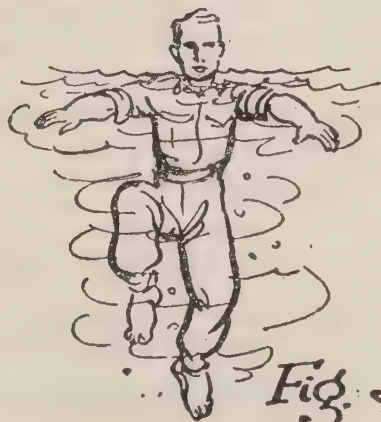


Fig. 54.

- (i) Spread one groundsheet on the ground, rubber side down. Place the two gas-capes on top of the groundsheet, tapes to the outside.
- (ii) Lay the two rifles lengthways on the gas-capes, with the butt of one opposite the muzzle of the other. Space the rifles apart at each end with the haversacks and place the respirators on top of the haversacks.
- (iii) Fill the space between the rifles with the two pairs of boots and the web equipment (Fig 43).
- (iv) The clothing is now folded and placed on top of the boots and web equipment (Fig 44).
- (v) Fold the gas-capes over the packed clothing and over all place the second groundsheet, rubber side uppermost. This should be evenly tucked in under the rifles and haversacks (Fig 45).
- (vi) Fold the first groundsheet over the bundle, so that the edges can be laced tightly together on top with a piece of string, lanyard or, failing these, with rifle pullthroughs. The string must be laced through every eyelet of the groundsheet and the edges drawn as close to the top of the bundle as possible. Fold in the corners carefully to prevent water leaking into the bundle, and fasten it securely with string or rifle slings. Two or three lashings should be taken at intervals round the whole bundle, and one lengthways, to hold it securely together (Fig 46).

If both men are strong swimmers the bundle is pushed forward in the water (Fig 47). If one of the men is a weak swimmer he will lie on his back and use the back stroke leg movements, while his partner, who must be a strong swimmer, pushes the bundle from the back, using breast stroke leg movements (Fig 48).

(b) *Single bundle*.—The following is the method of construction of the single bundle :—

- (i) Spread the gas-cape on the ground and place the groundsheet on top of it, arranging the vent holes so that they will be near to the top of the bundle.
- (ii) Place the respirator on the groundsheet, with one boot on either side of it.
- (iii) On these place the haversack and equipment (Fig 49).

- (iv) Fold the clothing and place it on top of the equipment (Fig 50).
- (v) Fold the groundsheet and gas-cape round the bundle and tie securely by means of the tapes (Fig 51).

The swimmer pushes the bundle forward in the water. He should wear his steel helmet and carry his rifle in the slung position (Fig 52).

**41. Surface diving and under water swimming.**—Apart from the value of being able to dive from the surface of the water in connection with life saving, the soldier may find the ability to do this very useful if suddenly precipitated into water, as a means of avoiding floating debris, flames on the surface or patches of oil. A surface dive is best made while swimming with the breast stroke. A full breath is taken as the legs are being drawn up, and as they are being powerfully swept round, the head is lowered and the arms are moved forcibly forward and downward. This is followed by a vigorous breast stroke arm movement, and a quick lifting movement of the buttocks until they are nearly vertical and in line with the descending body. The legs should be straight and together. To rise quickly to the surface, the head should be strongly bent backward, the swimmer looking up and making a vigorous stroke with the legs.

To be able to swim short distances under water is a useful military accomplishment, as it is a method of silent swimming. Probably the best way of swimming under water is to use a modified breast stroke. The body is kept under the water by pulling with the arms and keeping the head lowered.

**42. Method of swimming when river weeds or seaweed are encountered.**—If a swimmer finds himself in an area in which progress is difficult because of excessive weeds or seaweed, the most effective stroke to use is a slow crawl. As the recovery of the arms is over water in this stroke there is more opportunity to shake free from such entanglements. If, however, a swimmer does become entangled in weeds he should extricate himself by means of gentle, shaking movements of the limb concerned.

**43. Silent swimming and swimming with limited use of limbs**

- (a) *Silent swimming.*—For operational reasons it may on occasions be necessary to swim without attracting attention. Silent swimming requires the noiseless use of the limbs. Breast stroke is the most useful stroke for this purpose, and the limb movements should be slowly and carefully made. Neither hands nor feet should break the surface of the

water. Men should always quietly wade out as far as possible before commencing to swim. Silent swimming should be thoroughly practised, gradually and progressively increasing the amount of clothing and equipment worn. The distance should also be gradually increased until the swimmer has found the most comfortable position in the water in which arm and leg movements can be made noiselessly.

- (b) *Swimming with limited use of limbs.*—A wound or injury in one or both arms or legs, or in a shoulder or hip, may seriously hinder arm or leg action.

It is most important, therefore, that men should have the ability to swim and keep afloat even when they are not able to use both legs and both arms. In addition, the hands will frequently be occupied in towing or pushing, or in rescuing or helping a weak swimmer. A strong leg action in both breast and back strokes is most essential, and should be thoroughly practised. Swimming using the arms alone (*e.g.*, floating on the back, or vertical floating and sculling with the hands) should also be practised. To stimulate interest in this form of swimming during training, races and relay races in which arms only or legs only are used should be introduced. The amount of clothing and equipment worn should be progressively increased.

#### 44. Vertical floating and treading water

- (a) *Vertical floating.*—To float horizontally while wearing clothing and equipment is difficult, as the weight tends to force the body lower in the water. It is possible, however, to float for a time in a vertical or semi-vertical position. To do this, the arms should be raised forward on the surface of the water, and the legs kept apart and slightly bent. In this position, a sculling action with the hands and a strong partial closing and opening of the legs, will keep the swimmer afloat for a time (Fig 53). Floating in this position requires quick and strong movements of the limbs, with a considerable expenditure of energy, resulting in a comparatively early onset of fatigue.
- (b) *Treading water.*—This is a useful method of keeping the head above water in almost any case of emergency, the body being supported in a vertical position without any forward or backward movement. Probably the best method of treading water is to use the hands in an exaggerated sculling movement in which they sweep from the sides up towards the chest and then down and outward again to the sides, a downward pressure being exerted all the time, while

the legs are moved as though cycling (Fig 54). All the movements should be made slowly and steadily. Vertical floating and treading water should be practised while wearing a progressively increasing amount of clothing and equipment.

**45. Removal of clothing while in the water.**—Undressing in the water should be practised, as not only may it be necessary on occasions, but the ability to remove clothing in the water promotes confidence. The heaviest articles should be removed first, and all the necessary movements should be done quietly and in an orderly manner.

**46. Method of swimming when floating oil is encountered.** Men should be taught that if floating oil is encountered they should do a surface dive and swim under water. When coming to the surface to breathe, the arms should be waved about vigorously as the hands break the surface, in order to clear away as much oil as possible from the spot. A quick breath should be taken, followed immediately by a surface dive and another short spell of under water swimming. For men who find under water swimming difficult, swimming on the back will help to keep the mouth and eyes above water, and also minimize the risk of swallowing oil.

## SECTION 7.—BATTLE SWIMMING TESTS

**47. Battle Physical Efficiency Tests** include two swimming tests, Nos. VII and VIII. These are as follows :—

*Test VII.*—Swim 20 yards in denims with rifle and 50 rounds of ammunition. Boots to be attached to the rifle or slung round the neck. Steel helmet to be worn with the chin strap either in front of the forehead or round the back of the head.

*Test VIII.*—Swim 60 yards in fresh water, or 100 yards in salt water, dressed in denims without equipment or boots, and then remain afloat out of depth for 2 minutes. It is not necessary to remain floating during this period ; treading water and swimming around are permissible.

Where facilities are available, and subject to medical category and the necessary preliminary training, as laid down in ACI 764 of 1951, these tests are to be carried out annually by all ranks mentioned in Appendix " C " to that ACI.

## SECTION 8.—NIGHT TRAINING

48. Tactical surprise can be effected by undetected water crossings at night. To ensure silence the following points should receive attention :—

- (a) Men should be trained to wade silently in shallow water and to enter and leave the water without a sound.
- (b) Diving or jumping in should be forbidden.
- (c) Breast stroke should be used throughout.
- (d) The importance of correct breathing should be especially stressed, as incorrect breathing causes coughing through water entering the air passages.

49. It is advisable at first to rehearse the exercise in daylight. At night men will be expected to act without loudly spoken commands, even whispered commands may have to be dispensed with. In the early stages of training the strangeness of night swimming will slow down action and movement, and some men may lose direction. Only short distances in familiar surroundings should be attempted at first ; patience and caution as well as silence are essential to success. It is well to remember that many men have been drowned close to the shore, as believing themselves to be in their depth they have stopped swimming. It is advisable to swim ashore rather than to walk.

SECTION 9.—(paras 50 and 51) deleted.

## CHAPTER 4

# IMPROVISED AIDS FOR WEAK SWIMMERS AND NON-SWIMMERS, AND THE USE OF SUSPENDED ROPES AND ROPE BRIDGES

## SECTION 10.—IMPROVISED AIDS

52. It is important to remember that these aids will not necessarily support the whole weight of the man. Weak swimmers and non-swimmers must be trained to allow the water to support their weight, only using these aids as an additional assistance. Buoyancy of the body is the main principle underlying the use of improvised aids in the water. Provided a man keeps his shoulders below the surface and breathes normally he will be buoyant.

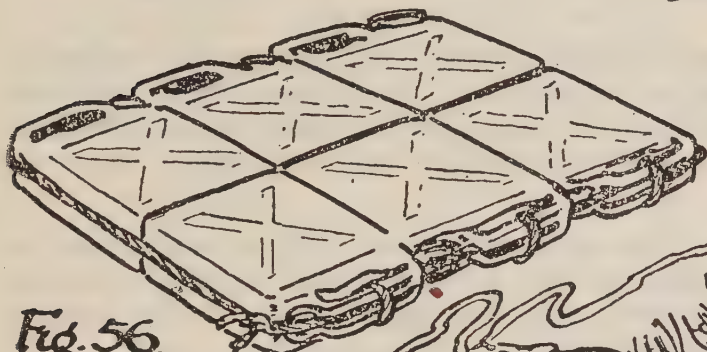
53. There are many different articles which will support a man in the water. Amongst these are the following :—

- (a) Empty tins, jerricans, boxes, and wooden crates.
- (b) Anti-gas cape packs.
- (c) Spars, logs and planks.

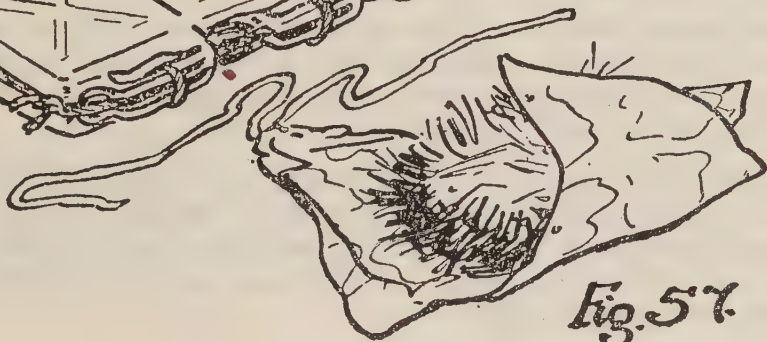
*Fig. 55.*



*Fig. 56*  
*(a)*



*Fig. 56.*  
*(b)*



*Fig. 57.*

*Fig. 58.*



*Fig. 59.*

- (d) Lifebuoys.
- (e) Life-lines.
- (f) Improvised rafts and boats.
- (g) Temporary buoys improvised from clothing, kit bags, sugar or flour sacks.

**54. Tins, boxes and wooden crates.**—Slowly moving water can be crossed by grasping an empty box, jerrican or small oil drum to the chest with both arms and using breast stroke leg movements. An empty petrol tin or .303 ammunition box will help to keep one man afloat (Fig 55).

Two empty tins or boxes joined together with a small piece of rope or equipment straps in the form of water wings give good support and have the advantage that both arms may be used in addition to the legs (Fig 56 (a)).

Six empty jerricans can be joined together to form a small raft. The handles must be on the outside to enable a rope to be passed through them and pulled tight to keep the tins together (Fig 56 (b)). This raft will easily support one man paddling himself across, or several men swimming.

**55. Anti-gas cape packs.**—The gas-cape filled with grass, twigs or straw and made into a bundle, 2 ft 6 ins long by 1 ft wide by 6 ins deep, can be used in the same way as a tin or box (Fig 57).

**56. Spars, logs and planks.**—These vary in buoyancy, and the correct method of using them as aids is most important, otherwise they will not afford adequate support. Men should be arranged alternately on each side of the floating spar or log, and equally spaced along it. Each man should place one forearm along the log and use the other arm and both legs as in breast stroke (Fig 58).

A spar or log attached to a rope as shown in Fig 59 is an excellent method of ferrying weak swimmers or non-swimmers across water.

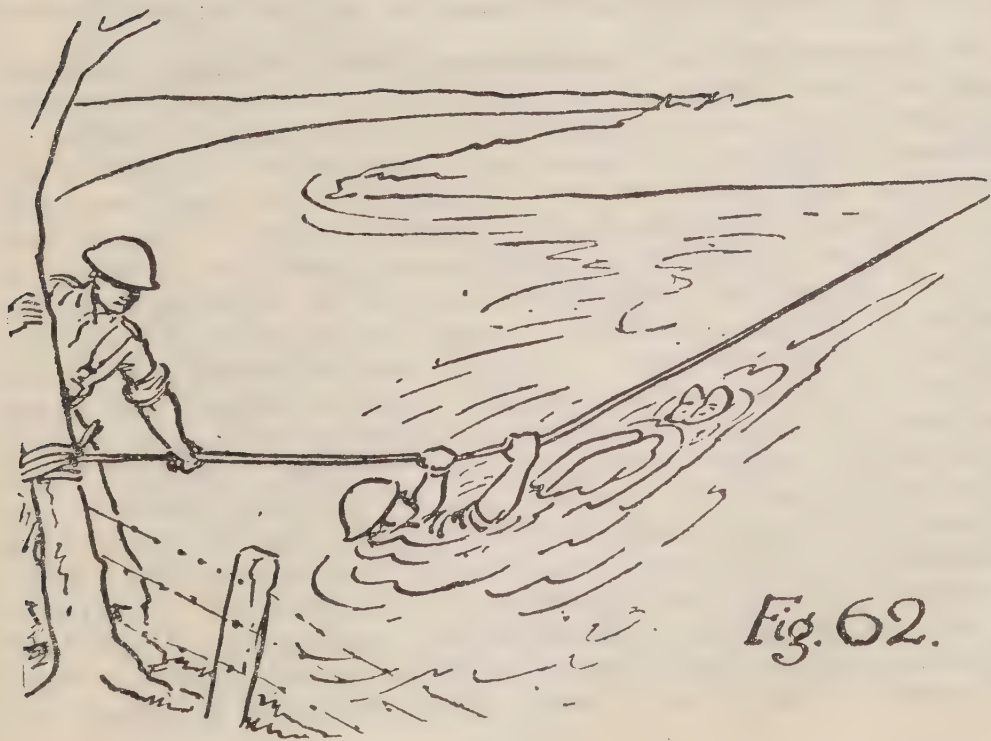
**57. Lifebuoys.**—As many as four men can easily be supported by one lifebuoy. If movement is required, the leading man swims on his back holding the buoy with both hands, while the two at the sides rest one forearm on the buoy and use the free arm and both legs as in breast stroke. The man at the back grasps the buoy with both hands and uses breast stroke leg movements (Fig 60). Another method is for two men to hold on with one or both hands in front of the buoy and use back stroke leg movements, while the other two men hold on with one or both hands at the back of the buoy and use breast stroke leg movements (Fig 61).



*Fig. 60.*



*Fig. 61.*



*Fig. 62.*

**58. Life-lines.**—Rifle slings or toggle ropes fastened together make useful life-lines when stretched from one bank to the opposite bank. The man crossing the water should be on his back and move hand over hand with short steps along the line (Fig 62). If the river is more than 30 yds wide it may be impossible to get the line taut enough for use in the way described above, especially if there is a strong current. In fast flowing water, life-lines may also be used to prevent men being carried away by the current. For this purpose two lines shoulder-width apart are safer than a single line. In addition, lines placed at intervals down stream will often prevent the loss of men who are carried away by the current.

**59. Improvised rafts and boats.**—An improvised raft can be made by lashing a stretcher to two inflated inner tubes (Fig 63), or by means of a framework of light sticks, approximately 6 ft. by 4 ft in size, to each corner of which two empty oil drums are lashed. A stretcher should be placed on top of the framework (Fig 64). A raft of this type can either be towed by swimmers or paddled. A small boat or canoe can be made from the tarpaulin cover of a 15-cwt. truck, a stretcher and two Wright's suspension bars. To make the boat the cover should be folded inwards towards the centre and the stretcher placed upside down on top of it, thus forming the bottom of the boat. The two suspension bars are fixed one at each end of the stretcher and the cover is raised to form the ends and sides of the boat. The cord or rope belonging to the cover is then used to lash the cover to the suspension bars (Fig 65). By means of ropes fixed at bow and stern the boat can be hauled to and fro across the water.

**60. Temporary buoys improvised from clothing, kit-bags, sugar or flour sacks.**—If no other means of support is available, temporary buoys can be improvised from the soldier's clothing, or from empty kit-bags, or from sugar or flour sacks. Trousers which have been either taken off in the water, or have been previously soaked through, make excellent temporary buoys. A single knot should be tied at the end of each trouser leg and the fly should be buttoned. One side of the waist band of the trousers should be grasped in each hand and the trousers should be thrown over the back of the head and neck. If the swimmer is already in the water he should then vigorously swing the trousers forward and downward over his head, so that the waist opening is brought smartly down on the surface of the water, thus trapping a good pocket of air in each trouser leg (Fig 66). He should then gather in the portion of the waist underwater and hold it with one hand while swimming with the other. The swimmer can also similarly inflate the trousers as he jumps into the water from the bank. Just before his feet hit the water he should swing the trousers forward and downward over his head, so that the waist opening strikes the water and traps a pocket of air in each leg, as previously described. On

Fig. 63.

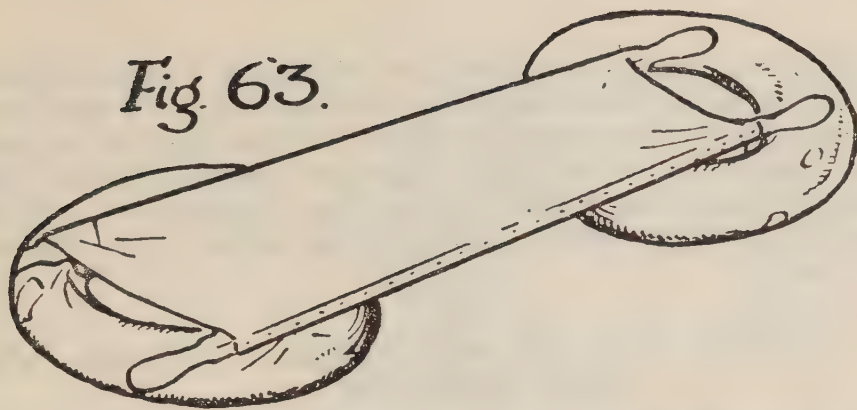


Fig. 64.

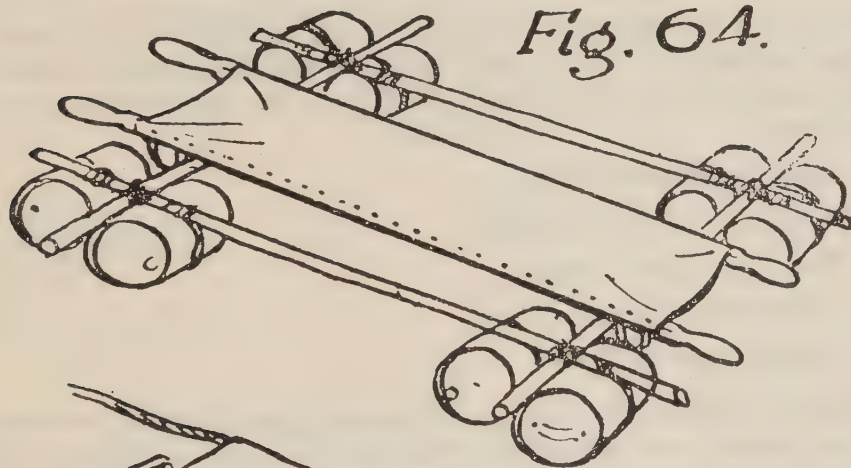
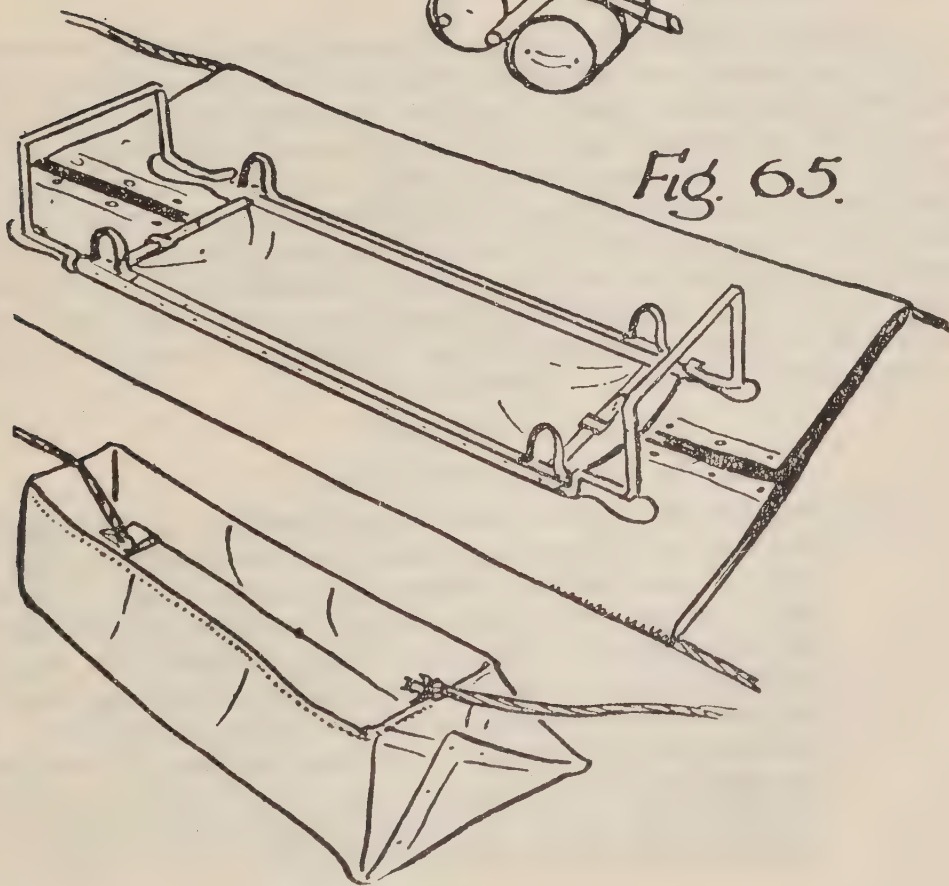


Fig. 65.



rising to the surface the trousers will be inflated and the swimmer, while holding the waist band under the water with both hands, then places the upper part of his chest between the trouser legs for support, using breast stroke leg movements to propel himself forward (Fig 67). Empty kit-bags, and sugar or flour bags, can also be inflated by capping the opening on the surface of the water in the manner described above.

## SECTION 11.—THE USE OF SUSPENDED ROPES AND ROPE BRIDGES

61. Where river banks are high or lined with trees, dry crossings can often be made by means of one or more suspended ropes. The following are the most practical methods of using ropes for this purpose :—

- (a) Single horizontal rope.
- (b) Parallel ropes 2 ft apart.
- (c) Hand and foot bridge.
- (d) Three rope bridge.
- (e) Toggle rope bridge.

62. **Single horizontal rope.**—A strong swimmer takes the rope across the water and fastens it securely to a tree or other suitable object on the other bank. To allow for sagging the rope must be suspended well above the surface of the water, and it should be made as taut as possible, using an improvised windlass, if necessary. The distance a swimmer carrying a rope can swim across a river is limited and there is the risk that the current, catching the rope, will prevent him from reaching the opposite bank. Further, if the river is more than 30 yds wide, it may be impossible to get the rope taut enough for use in the ways described below. There are two ways of crossing a single horizontal rope. These are :—

- (a) Lying on top of it.
  - (b) Hanging underneath it.
- (a) *Lying on top of the rope.*—The soldier lies on top, grasping the rope with both hands and with the arms straight. One knee is bent and the instep rests on the rope. The other leg is relaxed and hangs down, this leg is used to maintain balance (Fig 68). To move forward along the rope it is only necessary to pull with the hands and at the same time to push with the instep of the foot on the rope. The advantages of this way of crossing are that the soldier can see where he is going, and the body weight is supported on top of the rope. It is also possible to lie on top of the rope and rest, from time to time, during the crossing.



Fig. 66.

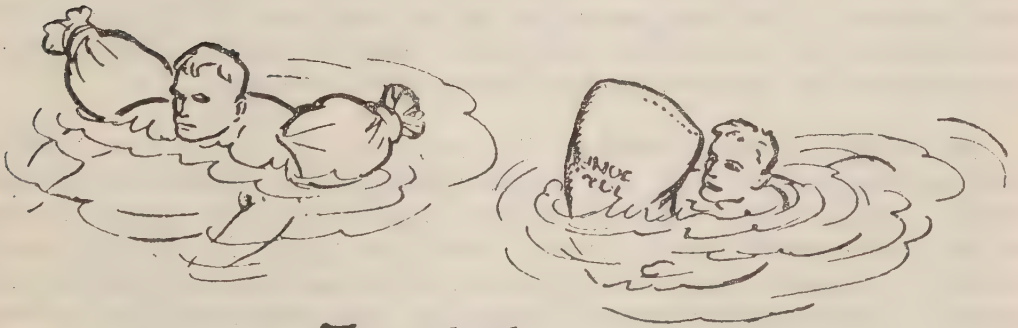


Fig. 67.

- (b) *Hanging underneath the rope.*—The simplest way of crossing when hanging underneath the rope is by means of the “Sloth Walk.” Opposite hands and legs are moved simultaneously (Fig 69). Another method is to hang by means of the hands and feet from the rope with the ankles crossed on top. The hands are first moved three paces along the rope until the body is fully stretched. Both knees are then lifted as near as possible to the hands and so on (Fig 70).

**63. Parallel ropes.**—Two parallel ropes, 2 ft. apart, suspended across the water, enable the men to cross in any of the following ways :—

- (a) Hands and knees crawl (knees on the outside, feet on the inside of the ropes), moving opposite hand and knee together (Fig 71).
- (b) Lying on top of the ropes, with knees bent and arms fully stretched, using opposite arm and leg in a manner similar to Leopard Crawl (Fig 72).
- (c) Lying on top of the ropes as in (b), pulling with the hands and pushing with the legs (Fig 73).

**64. Hand and foot bridge.**—Two ropes suspended across the water, one 6 ft. above the other. The men stand on the lower rope and grasp the upper rope. They then walk sideways ; for steadiness the hands should be together when the feet are apart and *vice versa*. To prevent the rope swaying men should be equally spaced along it, and every alternate man should face in the opposite direction (Fig 74). They should also lean slightly forward when taking the steps sideways.

**65. Three rope bridge.**—Two parallel ropes about 2 ft apart and a third rope approximately 3 ft lower are suspended across the water. The parallel ropes are used as hand-rails, the men walking on the lower rope. When crossing, the feet should be turned outward, the arms should be kept straight and the body should lean well forward. Walking paces should be used and the hands should slide along the hand-rails (Fig 75). Any tendency of the ropes to sway can be checked by forcing the arms sideways.

**66. Toggle rope bridge.**—To construct a toggle rope bridge the men should fall in in four ranks at single arm interval, each man with a toggle rope. Men in ranks 1 and 2 hold the toggle in the right hand, while men in rank 3 hold the toggle in the left hand. Ranks 1, 2 and 3 join their ropes to make one linked rope to each rank. Each man of rank 4, with the exception of No. 1, then threads his rope (loop first) through the toggle couplings of the

Fig. 68.

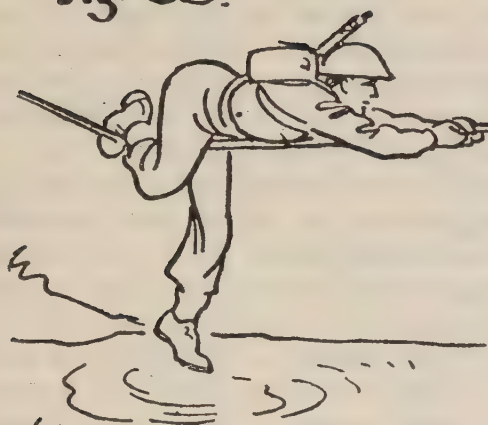


Fig. 69.

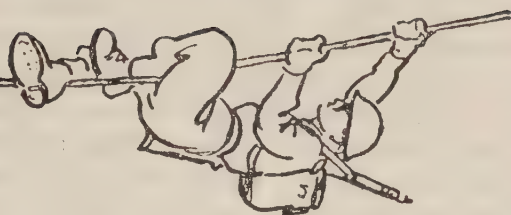


Fig. 70.



Fig. 71.



Fig. 72



Fig. 73.



Fig. 74.

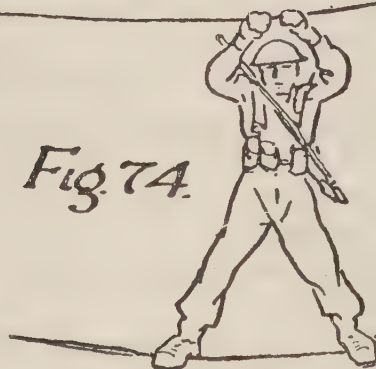
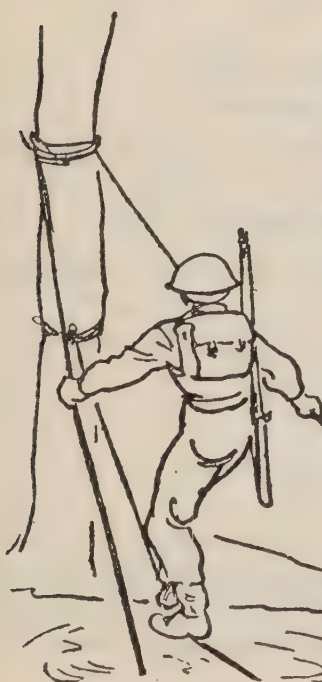


Fig. 75.



ropes of the men in ranks 3, 2 and 1 immediately in front of him, the loop being finally secured over the toggle of the rope of the man in rank 1 (Fig 76). When completed the bridge should be extended to its full length and the couplings examined. Ropes of ranks 1 and 3 form the hand-rails, the rope of rank 2 is the foot-rail. The lateral ropes of rank 4 give support and stability. No. 1 of rank 4 should be the strong swimmer, and he will take the bridge across the water, using his own toggle rope to secure the foot-rail to a tree or other suitable object on the opposite bank. To save time, he can be sent across with a light towing line while the bridge is being made, the bridge being subsequently pulled across. With practice, it can be made in about 30–60 seconds. Four ropes are needed for each span; for a bridge 30 ft long, twenty 6 ft toggle ropes will be required, with two additional ropes to secure each end of the bridge. The method of crossing is the same as that described in para 65 (Fig 77).

## CHAPTER 5

# LIFE SAVING AND RESUSCITATION

### SECTION 12.—INTRODUCTION

67. Knowledge and skill in the art of life saving and of resuscitation are of great importance to the soldier, and wherever possible, instruction should be given in the various methods. It is also important that every soldier should know how to help a weak or tired swimmer.

68. Pre-requisites to instruction in life saving are :—

- (a) A strong leg action in breast and back strokes.
- (b) The ability to breathe easily and efficiently even in rough water.
- (c) The ability to surface dive to a depth of at least 8 ft.
- (d) The ability to swim under water with eyes open for a distance of 40–50 ft.
- (e) The ability to enter water by jumping or diving from various heights.
- (f) The ability to tread water.

### SECTION 13.—LIFE SAVING

69. Details concerning the various methods of life saving are contained in the “ Handbook of Instruction ” published by the Royal Life Saving Society, 14, Devonshire Street, Portland Place, London, W.1. In addition to those methods, the following simple method,

Fig. 76.

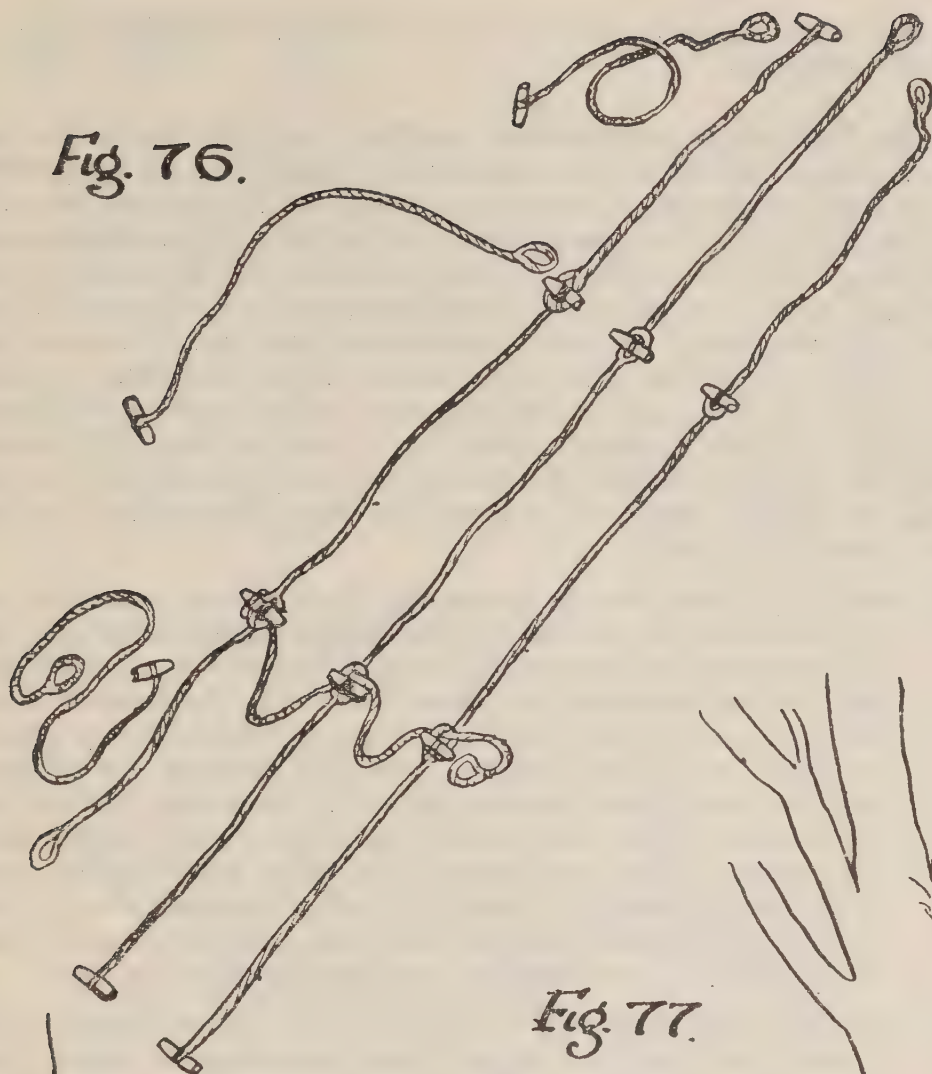
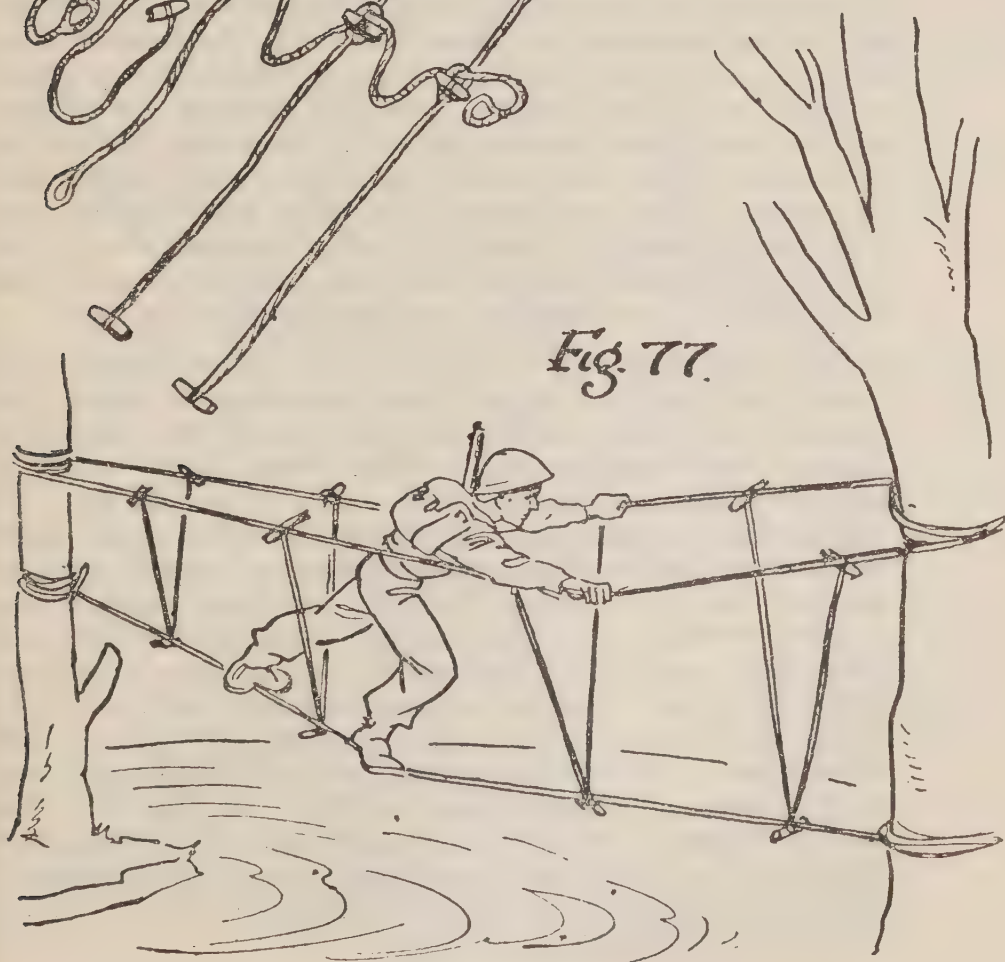


Fig. 77.



which has been devised by Dr. C. R. McGregor-Williams, M.A., should be practised.

**70. The McGregor-Williams method of life saving.**—In most methods of life saving the rescuer has to depend on leg power only. The above method, however, permits of the free movement by the rescuer, of one arm in addition to the legs. This constitutes an advantage, as the additional freedom and power enables the rescuer not only to move at a faster rate, but also to combat a current when necessary. In order to have one arm free it is essential that the grip exerted by the other hand on the drowning person should be strong, adequate in lifting power and capable of resisting all attempts to effect a release from it. In the McGregor-Williams method this grip is obtained by utilizing the very powerful leverage that can be brought into action when the lower jaw is held in the manner described below.

- (a) *Method of approach.*—It is essential that care be taken in the approach to the drowning man to ensure a secure lock on his lower jaw, so that once the grip has been applied, there will be no necessity to release it. From the moment the rescuer has applied it he must keep the initiative by maintaining the grip at all costs. To apply the grip, the drowning man must be approached in such a way that no struggle or seizure by him can possibly take place until the rescuer has taken a firm grip on the drowning man's lower jaw. The best method of approach in order to secure the grip as quickly as possible is from one side. After the grip has been applied, the drowning man is turned on his back.
- (b) *The grip.*—The grip can be applied with either hand. The thumb and the first finger partly encircle the lower jaw between the teeth and the jaw bone, while the remaining fingers, close together and bent at both joints, act as a support under the jaw (Figs 78 (a), 78 (b) and 78 (c)). To obtain the strongest grip, the thumb and first finger must be level and the remaining fingers must be properly bent to support the jaw. After the grip has been applied the rescuer, swimming on his back and using his free arm and both legs, tows the drowning man to a place of safety. The "gripping" elbow must always be kept bent to a right angle, and the drowning man's head must always be held close against the rescuer's chest and sufficiently high out of the water to make breathing easy. If the drowning man attempts to struggle, his head should be pressed forward and downward by placing the palm of the disengaged hand on the back of his head and the forearm against the upper part of his back (Fig 79).

Fig 78  
(a)



Fig  
78(b)

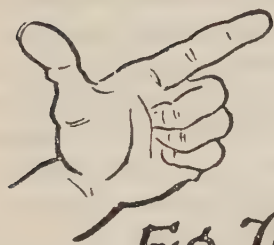


Fig. 78(c)



Fig. 79.

Fig. 80.

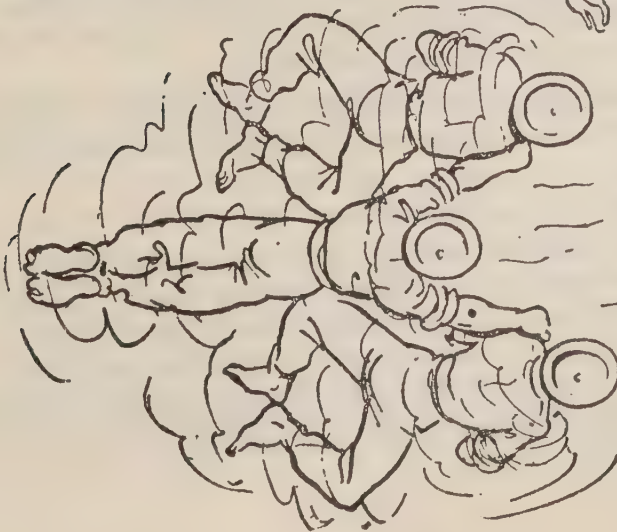
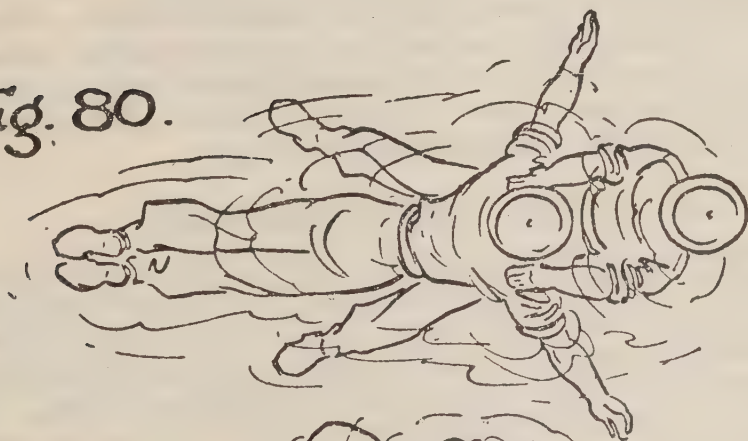


Fig. 81.

**71. Method of assisting the tired or weak swimmer.**—A soldier may sometimes be required during a water crossing to assist a tired or weak swimmer. The most effective method of doing this is for the tired swimmer to turn on to his back and place his hands on his rescuer's shoulders. He must keep his arms straight, his head well back and his legs spread well apart, otherwise he will come into bodily contact with his rescuer and make it much more difficult for both of them. The rescuer, using breast stroke, is then able to support and assist the tired swimmer to reach land safely (Fig 80).

**72. Surface diving.**—The ability to dive from the surface of the water is of the greatest service in saving life. The correct method of surface diving has already been described in detail in para 41. During the instructional period frequent practice should be given in diving from the surface of the water for objects at the bottom of the bath or river bed. A brick tied up in an old towel, or in a striped coloured and white covering, with loose ends, is very suitable for this purpose. It should be grasped with both hands before it is lifted from the bottom of the bath, and to assist the body to rise quickly to the surface a vigorous push-off should be made, if possible, from the bottom of the bath.

**73. Life saving when swimming in battle order.**—When the rescuer and the drowning man are both wearing battle order, the usual methods of rescue may be both exhausting and even inadequate. Under such circumstances, two men may be necessary to rescue one man in difficulties in the manner shown in Fig. 81.

#### SECTION 14.—RESUSCITATION

**74.** The ability to perform artificial respiration is one of the most useful accomplishments of the swimmer. It is not sufficient merely to have read about artificial respiration, it must be practised to acquire efficiency, for without efficiency it is useless. It is necessary to practise until the correct movements become automatic. Then, and then only, can the swimmer be sure of applying the movements correctly when the unexpected need arises.

**75.** There are several methods of artificial respiration. The Schafer method described below can, however, be used by anyone, anywhere, and single-handed.

The Schafer method of resuscitation :—

- (a) Lay the patient downwards with the left cheek on the ground, the arms stretched in front of the head, and the legs together. It is *most* important *first* to remove any foreign material, *e.g.* mud, weeds, etc., from the patient's mouth and throat, at the same time ensuring that the tongue is well forward, so that there is no obstruction to the free entry of air.

- (b) The operator kneels beside the patient and places his hands, with thumbs touching, on the small of the patient's back. Keeping the arms straight, he leans forward and presses with the weight of his body on the patient's loins.
- (c) The patient's abdomen is thus pressed against the ground, and the abdominal organs forced upwards against the diaphragm. The diaphragm rises and drives air and water out of the lungs.
- (d) The pressure is maintained for 3 seconds. The operator then leans back, so removing all his weight from the patient, for a count of 2 seconds. This allows fresh air to be drawn into the lungs before repeating the manoeuvre.
- (e) This procedure is repeated rhythmically every 5 seconds, until the patient himself can breathe normally.
- (f) The patient must then be made as warm as possible and seen by a medical officer without delay.

In cases where a patient does not recover rapidly and may in fact appear dead, artificial respiration *must* be continued (for several hours if necessary) until otherwise instructed by a medical officer.

## CHAPTER 6

### SAFETY PRECAUTIONS

**76. General.**—Commanders are responsible that all reasonable precautions are taken, according to local conditions, and that an officer is deputed to issue the necessary orders. These orders should be reviewed annually, and should cover organized training, organized recreation and, as far as possible, casual bathing by those who go off to bathe on their own.

All available information should be obtained from local authorities and inhabitants.

**77. Royal Life Saving Society awards.**—Every opportunity should be taken to train all ranks in Life Saving, and they should be encouraged to qualify for the awards of the Royal Life Saving Society, details of which may be obtained from the PT Staff or the Royal Life Saving Society, Desborough House, 14, Devonshire Street, Portland Place, London, W.1.

**78. Normal Precautions.**—Some or all of the following precautions will be necessary, according to local conditions :—

- (a) The marking of limits within which bathing is allowed, including any special limits for weak or non-swimmers.
- (b) Notification of dangerous localities where no bathing is allowed. It may be necessary to define further localities where non-swimmers may not bathe or may only bathe when special precautions are taken.
- (c) Notification of particular local dangers, *e.g.*, sharks, currents, under-tows, weeds, rocks, etc.
- (d) Notification of dangerous diving places, *e.g.*, shallow water, weeds, submerged rocks, etc.
- (e) The posting of strong swimmers (preferably qualified life savers) on the shore to control bathers. They should not be allowed to enter the water except to rescue, and must never fail to keep a close watch on every swimmer. They must have whistles and/or megaphones. Bathers should be warned to look to them on a whistle being blown and to maintain silence so that any instructions given can be heard and acted upon without any delay.
- (f) Employment of expert civilian life savers, with local knowledge.
- (g) Arrangements to ensure that all ranks are made aware of dangerous days, when no bathing is allowed.
- (h) The choice of specially suitable localities for the training of non-swimmers.
- (j) The use of some or all of the equipment mentioned in para 79 below.
- (k) The displaying of the Official RLSS poster which can be obtained from the Society at the address given at para 77 above. (Price eightpence each).

**79. Life saving equipment.**—Such of the following equipment as is suitable to local conditions should be immediately available :—

Windlass and life-line.

Ropes.

Life Buoys, or other improvisations.

Boats, with ropes, boat hooks and life buoys (the boats should be manned by strong swimmers working in conjunction with the life savers on shore).

Rafts.

Whistles or megaphones.

## **80. Special safety precautions for battle swimming.**

- (a) (i) Training must be thorough and graduated. No one must be allowed to take part in demonstrations or practices beyond their proved powers.

- (ii) All activities must be in charge of a competent swimming instructor. The necessary number of boats must be provided and must accompany the swimmers throughout.

Adequate life-saving personnel and apparatus must be immediately available.

- (b) Rafts made of wood, gasoline tins, barrels, etc., which must be thoroughly tested, are simple and effective aids for use by tired swimmers. Ropes are of great assistance, especially if there is a current or during practice at night.

A rope from the boat to the shore or across a river will give confidence, provided that it is fixed in such a way that a man in difficulty can grasp it. Two ropes forming a lane across a river are valuable aids for crossing under cover of darkness.

- (c) Provided that effect is given to the spirit of the provisions of (a) (ii) above, there is no objection to non-swimmers being taught and practised in how to cross water obstacles, out of their depth, and fully clothed and equipped, by other means than swimming, *i.e.*, by the aid of a rope or other improvised method.

The restriction imposed by sub-para (a) (i) above, refers only to swimming without aids.

- (d) An additional safety precaution to the above is to have the buckle of the belt and the shoulder straps unfastened to facilitate the quick discarding of the equipment in case of necessity.

## 81. Medical precautions in swimming training.

- (a) The following should not participate in any forms of swimming :—

- (i) Men in PES HO (the qualities P7 and S7 only being relevant) unless prior medical approval is obtained.
- (ii) Those with infections of the ear, nose, throat or eyes.
- (iii) Those who are “ off colour ” with minor illnesses (colds, diarrhoea, etc.).

- (b) Swimming must be avoided at these times :—

- (i) The period half an hour before to one hour after a heavy meal.
- (ii) Within half an hour of taking part in other forms of strenuous physical activity.

(N.B.—After a period of swimming other forms of strenuous physical activity should be avoided for one hour at least.)





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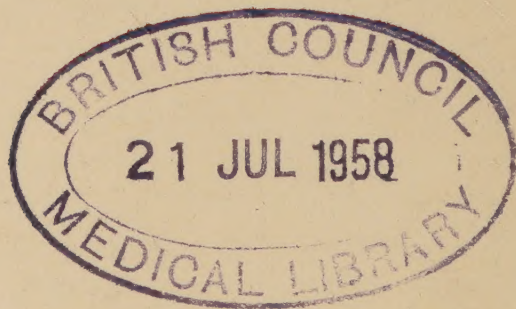
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